MAY 17 1918

THE IRON TRADE REVIEW

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OLIVER BUILDING, PITTSBURGH

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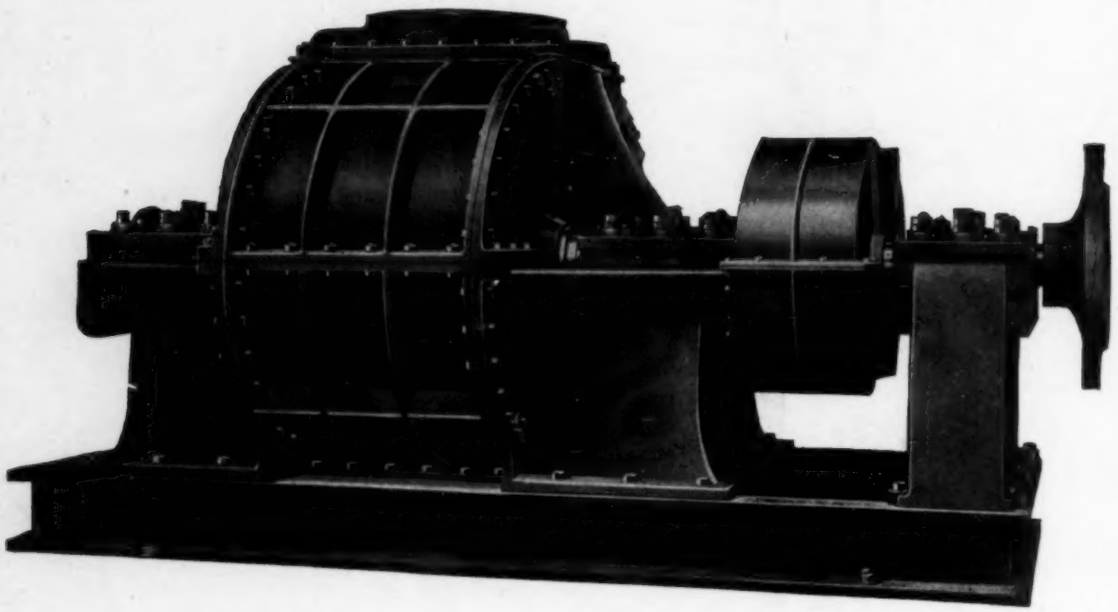

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NEW YORK
114 Liberty Street

THE IRON TRADE REVIEW

Vol. LXII Cleveland, May 16, 1918 *No. 20*

Great War Enterprises Maturing

Government's Urgent Demand for Full Mill Output Believed to be Based Largely on Needs Now Taking Form—Huge Building Program Planned—Ordnance Works Significant—Some Commercial Steel Expected

TREMENDOUS new requirements for war steel not hitherto disclosed apparently underlie the government's anxiety to command the full output of the mills and furnaces. The great ordnance program in which the Steel corporation finally has agreed to take a leading part is significant of other enterprises of corresponding magnitude which now are being matured. Construction plans unparalleled in their size and requirements are taking form. A government fabricating plant is reported to be among the possibilities. Producers quickly have adjusted themselves to the view that at least six months of full operations exclusively on government business will be necessary. Despite all that is being said, however, as to the insufficiency of steel supply for government requirements, the authoritative opinion of the industry is that not only will there be enough for war purposes, but in time some will be left over for commercial use.

Allies Want Much Steel

The needs of the allied governments are surprisingly large. In shell bars, 750,000 tons each, it is stated, will be needed at an early date for England, France and Italy. The British continue to call for an unexpectedly large tonnage of plates, shell steel, rails, etc. Much of this is to replace the steel borrowed by General Pershing. The British wants are interesting in the light of the 1917 statistics just announced, which show a steel production of approximately 10,000,000 tons, a high record figure, and approximately 2,300,000 tons greater than before the war. Present production is considerably greater. In Canada the question of commandeering the entire output of the works has been considered by the government.

Gray iron foundries are to be offered a new and broad opportunity to perform direct war work by the large orders for cast iron hand grenades, which soon will be placed. It is understood the government is inclined to favor this material for this purpose and it has caused a cessation of the manufacture of malleable hand grenades. Superior fragmentation is given as the cause. The production of cast shells also appears likely to be considerably extended.

Iron Industry Mobilized

The mobilization of the pig iron industry on a war basis rapidly is taking place. The committee on pig iron, iron ore and lake transportation has distributed official questionnaires among both producers and consumers. These data are to be used in classifying orders and production and in determining the channels of future distribution, so that war demands shall be served first. The commandeering by the steel director of 3000 tons of basic under order for export on the banks of a Harrisburg, Pa., producer further reflects the shortage in this grade and the methods being adopted by the government to meet it. This iron will go to a Chester, Pa., steelmaker doing Emergency Fleet work. Normal market movements in iron are suspended, but this has not deterred buyers from putting forth new inquiry.

Assure Full Coke Supply

The government, concerned over the shortage in pig iron, continues to exert pressure on the railroads to furnish full supplies of cars to the coke regions. This has brought adequate response and transportation service in the Connellsville region the past two weeks has reached 95 to 100 per cent. Coke producers, however, have not been able to take maximum advantage of this improvement, owing to the undermanned forces. The Connellsville region is expected soon to be on a 75 per cent producing basis, which practically will assure the furnaces of full requirements. In the east coke improvement has been so marked that the government has recalled recent orders to requisition certain supplies.

MAY 16, 1918

THE IRON TRADE REVIEW

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Two War Plans at Work

IN FRANCE a stupendous output in the production of war materials has been obtained largely by utilizing all of the capacity of the small manufacturers of the country. In a paper contributed to the American Foundrymen's association, E. Ronceray points out how even the smallest shops with a capacity of only two or three shells a day have been utilized. Although the ordnance needs of the United States today are fully as urgent as those of France, we have hardly yet scratched the production possibilities of our small and medium-sized manufacturers. We are prone in this country to think in large units and deal accordingly. Most of our war supplies, therefore, have been ordered from our largest manufacturers, from concerns trained and equipped to deal in outputs of millions. As a first step toward production on a scale sufficiently large to meet the demands of the war, this procedure of course had many advantages. It greatly simplified the task of the war department, both in placing contracts and in inspecting the finished work. In more than one case, however, such big orders were placed that the capacity of even the largest manufacturing establishments was quickly exhausted, with the result that these companies have had to spend huge sums for the rush construction of additional plant facilities. These new plants were built in some instances while existing capacity, owned by smaller companies, lay idle for lack of business. The malleable hand-grenade and rifle-grenade situation is a case in point.

The war department should not be wholly blamed for this situation. In many cases the manufacturers have failed to establish a suitable point of contact with the government. As pointed out by H. L. Dougherty in an address before the Cleveland Chamber of Commerce a few weeks ago, in too many cases the initiative has been put entirely up to the government. Manufacturers have written freely to Washington offering their services, but without definite knowledge of how to connect with an order. Also after tendering their facilities, there has been a tendency, Mr. Dougherty says, simply to sit back and await results.

Fortunately, this situation is changing rapidly. Throughout the country, producers are grouping themselves together to deal with the government collectively. Two distinct forms of organization are being developed. In one case the manufacturers, organized by industries, are acting through their national associations. This type of organization has probably been most highly developed by the American Iron and Steel institute, which acts for the steel industry as a whole through its war-service committee in Washington. The castings industry is similarly represented by the war-service committee of the American Foundrymen's association.

Another form of organization, known as the Cleveland Plan, is rapidly taking shape. This latter scheme is fully described in an article on page 1258 in this issue. According to the Cleveland plan, the country is divided into districts, with all manufacturers in all lines in each district working through a local chairman or district director. The actual work of keeping track of manufacturing capacity is delegated to subcommittees representing different lines of industry, each of these subcommittees operating within a definitely defined territory. Contact is to be established with the purchasing requirements of the government through an office which the central commission will establish in Washington. In this way it is believed every manufacturer in the district, no matter how small, will have an opportunity to bid on work in his line. This plan is being thoroughly tried out in the Cleveland district and its progress will be watched closely throughout the country.

It is evident, however, that both schemes of organization, one by districts and the other by industries through national associations, cannot survive. The purposes of these two plans are identical. Their object is to establish satisfactory contact between manufacturers and the government. The methods proposed, however, are distinct, and if both schemes were fully developed the resultant duplication of effort and complication would be highly unsatisfactory to all

concerned. Up to date neither plan has developed sufficient strength to overshadow the other. Both ideas are being carefully studied in Washington and it is probable that some suggestions will be forthcoming looking toward a working out of the problem on the basis of a single, unified program.

Too Much Labor Prosperity

NEVER before in the history of the world have workingmen enjoyed the degree of prosperity that is their present lot. This statement refers particularly to those engaged in munition-making. Now the average workingman does not change his standard of living as his wages advance. Thus, many of these workers, the majority of whom live from hand to mouth, find that they can get along very nicely through working about four days a week. Even at this rate, many of them seem to have an abundance of money as they are taking to buying luxuries with their savings. The government needs the full services of all its workmen and it needs them badly. Ships must be built without number, and munitions produced in unlimited quantities. In the face of this crying need, why should ablebodied men be allowed to turn loafers when they feel like it? War is the business of the whole nation. Can we afford to tolerate the slacker who makes such good wages that he feels he may lay off frequently? It is the old story with the workingmen; too much prosperity. However, we are in this war to win and the government eventually will not permit conditions wherein workingmen are hindering production. War workers will blame no one but themselves should conscription finally be found necessary.

Keeping Manufactures at Home

FOREIGN commerce for March, figures on which have just become available, presents some interesting points and furnishes some food for thought. Exports show that foodstuffs were exported to the amount of $155,279,206, compared with $69,797,946 in March, 1917. Exports of crude materials for use in manufacturing were of a total of $65,993,601 against $47,401,361 in the corresponding month last year. On the other hand, manufactures ready for consumption totaled only $173,926,239, against $270,754,803. Semifinished materials for manufacture in foreign countries also fell off. The inference is that while we are more than holding our own in foodstuffs and in raw materials, we are allowing our customers abroad to do more of their own manufacturing than formerly.

This doubtless is a result of war conditions which prevent manufacturers in this country from serving their foreign clients, as their facilities are taxed by our own needs. Then again the purely military aspects of the situation and shipping conditions may have something to do with it. At any rate, it would seem likely that our foreign commerce in the future may suffer from this enforced reduction of manufactured articles for export. While we are unable to supply foreign countries, they will increase their own manufacturing facilities and become more independent. This may be a considerable obstacle in the path of increased export business for the days "after the war", when we will have the ships and the shop capacity to supply the world.

Must Not Be Scapegoat

ANSWERING a query from the senate committee on interstate commerce for information as to what precautions are to be taken to supply sufficient cars to haul next winter's coal supply, the railroad administration has declared that "cars will be built just as rapidly as the steel, which is the controlling feature, can be provided." This statement smacks of the familiar sound of "passing the buck" and affords food for much thought on the part of steel manufacturers and pig iron producers. Already pledged to meet unprecedented demands due to a shortage over which it has no control, and with instances before it of some companies which have not responded fully to the war call, the iron and steel industry may well sense a warning and see to it religiously that its own skirts are kept clear.

Executives who, because of time-honored practices, have let subordintes handle important matters, now must get in closer touch themselves with details of their business if they want to be certain their responsibilities are being fully met. Subordinates, who have waited word from officials higher up before acting, must decide for themselves matters of importance from a war standpoint. Every order on the books should be watched from every angle. Daily developments in the war must, to an extent, guide daily mill operations. Priority orders are for the general guidance of manufacturers, but, as a rule, hit only the high spots. In between, there is much each mill operator must decide for himself. As Judge Gary has said, "use your conscience. And if you have any doubt about it, make inquiry." The Emergency Fleet corporation wants to build up reserve supplies of materials to tide over the expected transportation difficulties of next winter. The plan to increase the size of the army means new and unheard-of demands for steel. Plans may slip somewhere and if they do ugly snarls may develop. The railroad administration has indicated it will blame the steel industry if there isn't sufficient coal cars. It is up to each producer to see that his plant is not remiss in any way so that there will be no chance to lay upon the industry, the burden of responsibility for the nonperformance of any war enterprise. The iron and steel industry should not permit itself to be made the scapegoat for the mistakes, overconfidences or faulty judgments of others.

Iron and Steel Prices

Corrected to Wednesday Noon

SCRAP, WAREHOUSE AND IRON ORE PRICES ON PAGE 1282

PIG IRON

Bessemer, valley	$35.20
Bessemer, Pittsburgh	36.15
Basic, Pittsburgh	32.95
Basic, eastern Pa.	32.00
Basic, Buffalo	32.00
Malleable, Pittsburgh	34.45
Malleable, Chicago	33.50
Malleable, Philadelphia	34.00 to 37.50
Malleable, Buffalo	33.50

GOVERNMENT SCHEDULE

1.75 to 2.25 silicon (No. 2 foundry, No. 2 plain, and No. 3 southern), $33 furnace base.

2.25 to 2.75 silicon (No. 2X, No. 1 Northern foundry, and No. 2 southern), base plus 50c.

2.75 to 3.25 silicon (No. 1X, No. 2, soft), base plus $1.50.

Over 3.25 silicon, $34.50, plus $1.00 for each ½ per cent of silicon.

No. 1X, Phila.	35.25 to 35.50
No. 2 foundry, Pittsburgh	33.95
No. 2 foundry, Cleveland	33.95
No. 2 foundry, Ironton	33.00
No. 1 foundry, Chicago	33.50
No. 2 foundry, Chicago	33.00
No. 2X foundry, Phila.	34.25 to 34.50
No. 2X foundry, N. J. tide	34.25 to 34.50
No. 2X foundry, Buffalo	33.50
No. 2 plain, Philadelphia	33.75 to 34.00
No. 2 plain, N. J. tide	33.75 to 34.00
No. 2 southern Birmingham	33.00 to 33.50
No. 2 southern, Cincinnati	36.40
No. 2 southern, Chicago	37.50
No. 2 southern, Phila. del.	38.30 to 39.40
No. 2 southern, Cleveland	37.50
No. 2 southern, Boston	39.50
No. 2 southern, St. Louis	35.90
Virginia, No. 2X, furnace	33.50
Virginia, No. 2X, Phila.	36.77
Virginia, No. 2X, Jersey City	37.02
Virginia, No. 2X, Boston	37.27
Gray forge, Pittsburgh	32.95
Silveries, 8 per cent, furnace	46.00
Silveries, 8 per cent, Chicago	48.54
Low phos. standard, Phila.	55.00 to 56.00
Low phos., Lebanon, furnace	50.00
Low phos., Pittsburgh	53.00
Charcoal, Superior, Chicago	37.50
Charcoal, Superior, Buffalo	39.75
Charcoal, southern furnace	43.00

COKE

(At the ovens)

Connellsville furnace	$6.00
Connellsville foundry	7.00
Pocahontas furnace	8.00
Pocahontas foundry	8.00
New River foundry	8.00
New River furnace	7.00
Wise county furnace	6.00
Wise county foundry	7.00

FERROALLOYS

Ferromanganese, 80 per cent delivered	$290.00
Ferromanganese, 70 per cent delivered	250.00
Spiegel, 16 per cent fur., spot	75.00
Spiegel, contracts, furnace	70.00
Ferrocarbon titanium, carloads, maker's plant	200.00
Ferrosilicon, 50 per cent, second quarter, Pitts.	155.00 to 160.00
Ferrosilicon, 50 per cent, Pitts., remainder of 1918	150.00
Bessemer ferrosilicon, 10 per cent.	55.00
Bessemer ferrosilicon, 11 per cent.	58.30
Bessemer ferrosilicon, 12 per cent.	61.60

Ferrosilicon prices at Ashland, Ky., Jackson and New Straitsville, O.

SEMIFINISHED MATERIAL

BILLETS AND BLOOMS

Open-hearth, Pittsburgh	$47.50
Open-hearth, Philadelphia	50.50
Open-hearth, Youngstown	47.50
Bessemer, Pittsburgh	47.50
Bessemer, Youngstown	47.50
Forging, Pittsburgh	60.00
Forging, Philadelphia	63.00

SHEET BARS

Open-hearth, Pittsburgh	$51.00
Open-hearth, Youngstown	51.00
Bessemer, Pittsburgh	51.00
Bessemer, Youngstown	51.00

SLABS

Pittsburgh and Youngstown.	$50.00

WIRE RODS AND SKELP

Wire rods, Pittsburgh	$57.00
Grooved skelp, Pittsburgh	2.90c
Sheared skelp, Pittsburgh	3.25c

SHAPES, PLATES AND BARS

(In cents per pound)

Structural shapes, Pitts.	3.00c
Structural shapes, Phila.	3.185c
Structural shapes, N. Y.	3.195c
Structural shapes, Chgo.	3.00c
Tank plates, Chicago	3.25c
Tank plates, Pittsburgh	3.25c
Tank plates, Philadelphia	3.435c
Tank plates, New York	3.445c
Bars, soft steel, Pittsburgh	2.90c
Bars, soft steel, Chicago	2.90c
Bars, soft steel, New York	3.095c
Bars, soft steel, Phila.	3.085c
Bar iron, Chicago	3.50c
Bar iron, Phila.	3.50c to 3.685c
Bar iron, Cleveland	3.64c to 3.70c
Bar iron, New York	3.50c to 3.695c
Bar iron, Pittsburgh	3.50c
Hard steel bars, Chicago	3.00c

RAILS, TRACK MATERIAL

Angle bars, Pittsburgh base.	3.25c
Angle bars, Chicago base	3.25c
Standard bessemer rails, mill	$55.00
Stand. open-hearth rails, mill	57.00
Light rails, 25 to 45, mill	3.00c
Relaying rails, light, St. L.	60.00 to 67.00
Spikes, railroad, Pitts.	3.90c
Track bolts, Pittsburgh	4.90c
Track bolts, Chicago	5.115c
Tie plates, Chicago	3.25c

WIRE PRODUCTS

(Per 100 lbs. to jobbers; retailers 5c more)

Wire nails, Pittsburgh	$3.50
Coated nails, Pittsburgh	3.45
Plain wire, Pittsburgh	3.25
Galvanized wire, Pittsburgh	3.95
Polished staples, Pittsburgh.	3.65
Galvanized staples, Pbgh.	4.35
Barb wire, painted, Pitts.	3.65
Barb wire, galvanized, Pitts.	4.35
Cut nails, Pittsburgh	4.00

CHAIN, PILING, STRIP STEEL

(In cents per pound)

Chain, ⅜ in. proof coil, Pitts.	8.00c
Sheet piling, base, Pitts.	4.00c to 5.00c

Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100 inch and heavier, base per 100 pounds, 6.50c.

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SHEETS

(In cents per pound)

SHEET MILL BLACK

No. 28, open-hearth, Pitts.	5.00c
No. 28, bessemer, Pitts.	5.00c
No. 28, open-hearth, Chi.	5.215c

TIN MILL BLACK

No. 28, open-hearth, Pitts.	5.00c
No. 28, bessemer, Pitts.	5.00c

GALVANIZED

No. 28, open-hearth, Pitts.	6.25c
No. 28, bessemer, Pitts.	6.25c
No. 28, open-hearth, Chi.	6.465c

BLUE ANNEALED

No. 10, open-hearth, Pitts.	4.25c
No. 10, bessemer, Pitts.	4.25c
No. 10, open-hearth, Chi.	4.465c
No. 10, open-hearth, Phila.	4.435c

TIN PLATE

(Per 100 lb. box)

Tin plate, coke base, Pitts.	$7.75

IRON AND STEEL PIPE

Base Pittsburgh

Base Pittsburgh	Black Per cent off	Galv. Per cent off
⅛ to 3 in., butt, steel	51	37½
¼ to 3 in., butt, iron	33	17

BOILER TUBES

Steel, 3½ to 4½ inches, l. c. l.	30
Iron, 3½ to 4½ inches, c. l.	12½

CAST IRON WATER PIPE

(Class B Pipe)

Four-inch, Chicago	57.30
Six-inch and over, Chicago	54.30
Four-inch, New York	58.35
Six-inch and over, N. Y.	55.35
Four-inch, Birmingham	52.00
Six-in. and over, Birmingham	49.00

HOOPS, BANDS, SHAFTING

Class A pipe is $1 higher than Class B.

Hoops, Pittsburgh	3.50c
Bands, Pittsburgh	2.90c
Shafting, Pitts., carloads	17 off to list
Cotton ties, May, per bundle	$1.91

RIVETS

Structural rivets, Pittsburgh.	4.65c
Boiler rivets, Pittsburgh.	4.75c
Rivets ⅞ in. & small., Pitts.	45 and 10 off

NUTS AND BOLTS

(Delivered within 20-cent freight radius)

CARRIAGE BOLTS

(⅜ x 6 inches, smaller and shorter)

Rolled thread	50–5 off
Cut thread	40–10–5 off
Larger and longer	40 off

MACHINE BOLTS

(⅜ x 4 inches, hot pressed nuts)

Rolled thread	50–10–5 off
Cut thread	50–5 off
Larger and longer	40–10 off
Cold pressed semifinished hexagon nuts ⅝ in. and larger	60–10–10 off
Cold pressed semifinished hexagon nuts ⅞ in. and smaller	70–5 off
Gimlet and cone point lag screws	50–10 off

NUTS

Hot pressed, square blank	2.50c off
Hot pressed, square tapped	2.30c off
Hot pressed, hexagon blank	2.30c off
Hot pressed, hexagon tapped	2.10c off
Cold pressed, square blank	2.25c off
Cold pressed, square tapped	2.00c off
Cold pressed, hexagon blank	2.25c off
Cold pressed, hexagon tapped	2.00c off

Prices Present and Past

(Yesterday, a month ago, three months ago and a year ago)

Quotation on leading products May 15, average for April, 1918, average for February, 1918, and average for May, 1917. Prices are those ruling in the largest percentage of sales at the dates named.

	Prices May 15, 1918	Average prices April, 1918	Feb., 1918	May, 1917
Bessemer pig iron, Pittsburgh..	$36.15	$36.15	$37.25	$44.95
Basic pig iron, Pittsburgh.....	32.95	32.95	33.95	42.15
*No. 2 Foundry pig iron, Pitts.	33.95	33.95	33.95	43.55
*No. 2, Foundry pig iron, Chi.	33.00	33.00	33.00	43.20
Lake Superior charcoal, Chicago	37.50	37.50	37.50	49.25
Malleable, valley	33.50	33.50	33.50	42.70
Malleable, Chicago	33.50	33.50	33.50	43.20
**Southern, No. 2, Birmingham.	33.50	33.50	33.50	35.75
*Southern Ohio No. 2, Ironton	33.00	33.00	33.00	38.60
Basic, eastern Pa.....	32.00	32.00	33.00	40.75
**No. 2X Virginia, furnace....	33.50	33.50	33.50	41.00
**No. 2X foundry, Philadelphia	34.25	34.25	34.25	43.25
Ferromanganese, 70%, delivered.	250.00	250.00	250.00	425.00
Bessemer billets, Pittsburgh....	47.50	47.50	47.50	85.00
Bessemer sheet bars, Pittsburgh	51.00	51.00	51.00	88.00
Open-hearth sheet bars, Pitts..	51.00	51.00	51.00	88.00
Open-hearth billets, Pitts.....	47.50	47.50	47.50	85.00
Steel bars, Pittsburgh.....	2.90	2.90	2.90	3.50
Steel bars, Chicago.....	2.90	2.90	2.90	3.84
Iron bars, Philadelphia.....	3.50	3.50	3.50	4.109

	Prices May 15, 1918	Average prices April, 1918	Feb., 1918	May, 1917
Iron bars, Cleveland.....	$3.64	3.64	3.64	3.25
Iron bars, Chicago mill.....	3.50	3.50	3.50	3.39
Beams, Chicago	3.00	3.00	3.00	4.34
Beams, Pittsburgh	3.00	3.00	3.00	4.00
Beams, Philadelphia	3.185	3.185	3.185	4.659
Tank plates, Pittsburgh.....	3.25	3.25	3.25	4.50
Tank plates, Chicago.....	3.25	3.25	3.25	5.49
Tank plates, Philadelphia.....	3.435	3.435	3.435	7.559
Sheets, blk., No. 28, Pitts.....	5.00	5.00	5.00	7.00
Sheets, blue anld., No. 10, Pitts.	4.25	4.25	4.25	6.65
Sheets, galv., No. 28, Pitts....	6.25	6.25	6.25	8.80
Wire nails, Pittsburgh.....	3.50	3.50	3.50	3.50
Connellsville furnace coke.....	6.00	6.00	6.00	8.00
Connellsville foundry coke.....	7.00	7.00	7.00	8.50
Heavy melting steel, Pitts.....	29.00	29.00	30.00	28.40
Heavy melting steel, eastern Pa.	28.50	28.30	30.00	26.00
Heavy melting steel, Chicago..	29.00	28.65	30.00	28.70
No. 1 wrought, eastern Pa.....	34.00	34.00	35.00	40.75
No. 1 wrought, Chicago.....	33.50	33.50	35.00	36.40
Rerolling rails, Chicago.....	34.00	34.00	35.00	36.80

*1.75 to 2.25 silicon. **2.25 to 2.75 silicon.

(For Additional Prices See Page 1282)

Mobilizing Iron Industry for War

Producers Co-operate With Pig Iron Committee in Sending Out Questionnaires to Consumers—Believed Government Needs Can Be Fully Met Through System—Further Basic is Commandeered

Pittsburgh, May 14.—Well informed men in the trade insist that there is going to be enough pig iron for the government. Proper furnace operations and distribution of tonnages, they assert, will take care of all requirements for direct and indirect war work, as enormous as they are and will be. Questionnaires being prepared and sent out to furnaces by the committee on ore, pig iron and lake transportation will put into the hands of the government a complete survey regarding the output of the different grades, contracts on hand, their character and time of deliveries. With this analysis made, readjustment as to production, shipments and allotments may be necessary for it is the purpose of the work to see that government's needs, direct and indirect, are taken care of first, and if a surplus of iron then remains, it will be applied on other commitments. Manufacturers of less essentials may be cut off entirely from receiving iron. Through this plan foundries and steel plants doing government work are to be given iron according to their needs. Both classes of consumers have become alarmed lest they will not be able to cover requirements. Consumers of gray iron, as previously stated, are having the situation canvassed by the war service committee of the American Foundrymen's association. The changing of a number of furnaces to basic iron production has prompted this action. This has curtailed the output of both foundry and bessemer grades and consumers of the latter also are uneasy over the situation. Furnace interests say there is no justification for alarm but that all government requirements will be met and if readjustment of operations is necessary this will be done, probably through action of Washington authorities. Inquiries for iron still are being made but are less numerous. Consumers find there are no offerings and they are being told by the furnace interests to put their inquiries before the war industries boards, producers standing ready to furnish iron wherever possible, upon orders from or through the board. A steelmaker in this district is asking for 1000 tons of bessemer iron and a round lot of basic for prompt delivery. The Carnegie Steel Co. has added another furnace to its active list and now has 54 of its 59 stacks in operation.

Deliveries Much Better

Boston, May 13.—Deliveries of iron to this territory leave little room for complaint, save possibly from Virginia, where the Norfolk & Western is said to be in bad shape for accepting freight coming this way. It is reported that with the lifting of the New Haven embargo that one became automatically effective on the Norfolk & Western; confirmation of this report is not to be had locally, since the Boston office of the road like that in New York has been shut by government order. The fact remains, however, that little iron except that coming through on government permits, is reaching this section from Virginia. Alabama iron is coming through freely both on government permits and without them, for embargoes from Cincinnati via the Pennsylvania lines have been raised and large quantities of southern iron are now being routed by way of that city.

An embargo on the Boston & Albany is not seriously interfering with the movement of northern iron this way for the Boston & Maine is clear and practically all the New Haven gateways are now open, the embargoes having been lifted on Harlem River, Campbell Hall and Maybrook. Inquiries for iron continue fairly numerous. A Massachusetts valve manufacturing concern has succeeded in placing an order for 1000 tons of Alabama iron for prompt shipment by guaranteeing a government shipping permit. There is an inquiry for 500 tons of bessemer for third quarter delivery and a round tonnage of foundry iron of 2.25 silicon or higher is being sought by a Connecticut melter for June-October delivery, while an inquiry for 1000 tons of No. 1 foundry by a Connecticut buyer has been out for several days. Inquiries do not bring very prompt responses from the furnaces. While the makers are running fuller and are making some inroads on accumulated orders, they are yet in a position to accept much of the business offered.

Questionnaires Being Circulated

New York, May 13.—Questionnaires for ascertaining and classifying pig iron production and the requirements of all consumers now are being circulated by the committee on pig iron, iron ore and lake transportation acting for the war industries board. This is in accordance with the plan outlined in last week's IRON TRADE REVIEW and more fully explained in this issue. No iron has been sold in this district during the past week as far as known. Many inquiries, some for large tonnages, are out, but are receiving no attention. Furnaces now are occupied solely with making deliveries. Shipments are being made at a better rate than for some time past. Numerous permits have been granted for the shipment of iron from Virginia and also for some from the south to this district. Incidentally, nothing yet has developed from the proposal of the railroad embargo committee at New Haven to secure the shipment of several trainloads of Virginia iron to New England. At the instance of this committee, many consumers obtained permits for their iron and these were sent through to the furnaces. It is believed that the principal reason for the failure to carry out this project was the lack of stocks at Virginia furnaces. Virginia stacks now are shipping iron practically as fast as they make it.

Coke Supply Now Ample

Philadelphia, May 14.—For the first time in months all eastern furnaces have sufficient coke to meet their full needs. The situation has improved so much that government orders requisitioning coke for certain furnaces during the recent scarcity, have been recalled. The change in the situation is due partly to the modification of the Pennsylvania railroad's prohibition against the sending of large type coke cars off its lines, but largely to the action of the railroad director in switching cars from sand, gravel and other commodities to coke. It is expected that this improvement will soon become apparent in pig iron production and deliveries. The furnaces continue to deliver iron in accordance with original contracts and are exercising their own judgment in selling small tonnages as they find them available. The only current sales consist of off lots. Considerable borrowing of iron has been done recently by consumers in need with the understanding that this tonnage is to be returned later. New inquiries include 15,000 tons of foundry for June-December delivery for the Eddystone, Pa., plant of the Baldwin Locomotive Works and 3000 tons of second half delivery for the Westinghouse Electric & Mfg. Co. for its Essington, Pa., plant. The new No. 3 furnace of the Alan Wood Iron & Steel Co. at Swedeland is 75 per cent complete and is expected to be blown in this fall.

Basic Tonnage Commandeered

Cleveland, May 14.—Pig iron producers in this territory have begun the distribution among their consumers of the statistical forms prepared by the committee on pig iron, iron ore and lake transportation to determine the amount of essential business for which metal is required. In the meantime normal market activities are suspended, although various consumers continue to put out new inquiry and to attempt to make purchases. Further allocations are being made through the committee to cover war needs. The steel director has commandeered 3000 tons of basic in stock at Harrisburg, Pa., for a Chester, Pa., steelmaker who wanted 3500 tons of prompt iron for Emergency Fleet orders. The title to this basic which was under sale for export rested with a bank. Valley makers will furnish 1000 tons of bessemer for a Washington, D. C., ordnance maker. Further Emergency Fleet business up for allocation includes 400 tons of No. 2 foundry for June-July for a Portland, Oreg., melter; 350 tons of No. 2X and 125 tons of charcoal for June-July for an Allentown, Pa., plant; 500 tons of early Nos. 2X and 2 plain for a Baltimore user which will go to Alabama makers. In the open market a Brackenridge, Pa., steelmaker wants 1000 tons of bessemer and an indefinite tonnage of basic. There is some demand for mill forge. Some inquiry also is current for low phosphorus but western makers have little unsold tonnage for this year. The Stewart Iron Co. furnace is going out this week for relining. Some slowing down of melt among jobbing foundries doing regular commercial work is apparent.

Buyers are Persisting

Buffalo, May 14.—In the face of the repeated replies to consumers by furnacemen that they are unable to supply them with iron, even in small quantities, the former during the past week have been seeking information as to when the sellers will again be in the market with iron. Furnacemen have been unable to satisfy these queries and the request has been made in several instances that the consumer be notified when the time arrives. This is about the best that sellers have been able to do for their customers of late, as the shortage of iron continues to be the absorbing feature of the situation. Some sizable inquiries have been received from New York and New England but these have been treated the same as much other good business during the past six months. All furnaces are endeavoring to get ahead on shipments and this for most of them, is an all-absorbing problem. Stack A of the Donner Steel Co. at Tonawanda which was relined during the time it was out will be placed on ferromanganese shortly. It is running on foundry at present. The government is insisting that its orders for iron be filled before ordinary requirements.

West Needs Basic

Chicago, May 14.—Chicago producers of pig iron are directing their efforts mainly toward production and equitable distribution to serve melters in the best possible way. With their production for the remainder of the year entirely sold and some government orders being placed for immediate delivery, there is no possibility of their taking further contracts. Basic melters in the St. Louis district are still in need of that grade to fill out requirements for the remainder of the year and while they are not now actively inquiring, having learned the impossibility of placing further tonnages at present, they are in a receptive mood and will take whatever may be offered. Inquiry has fallen off, principally because it is not well received, but there is an open need for iron, indicated by the fact that any offer is immediately taken up. A survey of foundries outside of Chi-

cago recently disclosed that many have two to three months supply on their yards, and with what they will naturally receive during the summer, it seems probable they are comfortably provided for the remainder of the year. With an estimate of 200,000 tons of iron piled on furnace yards in the south, unshipped because of lack of cars, greater activity on the part of railroads should assist materially in furnishing stock for foundries which have contracts for the metal. No. 3 foundry is being taken readily whenever offered, as most foundrymen find it possible to obtain a good mixture of this iron with other grades carrying more silicon. A southern stack just put in blast is offering some off iron which is finding ready sale, carrying silicon from 4.06 to 6.50 and sulphur from 0.072 to 1.97.

Inquiries Still Plentiful

Cincinnati, May 13.—Judging from reports made by different firms there will be little chance for any iron melter to get a future supply unless engaged in work that is considered essential for carrying on the war. Fortunately for the foundries in this district nearly all castings are for concerns whose products are on the essential list. New business is very light, but inquiries are plentiful.

Plants Begin to Curtail

St. Louis, May 11.—The market for pig iron is working daily more completely to a war basis. Dealers report that less effort is being made to contract for supplies for the last quarter. The underlying demand, however, is enormous, and phenominally heavy tonnages of all grades could be disposed of in the immediate district were they available. To date there has been relatively little curtailment in activities but it was learned this week that a number of important manufacturers are preparing to cut down outputs in expectation of lack of raw materials, which they believe inevitable.

Furnace Stocks Shrink

Birmingham, Ala., May 14.—Southern furnace companies are about out of the market. A few sales are being made, usually in small lots, for delivery during the last half. Inquiries remain numerous. Government needs are receiving attention. Every shipment of iron is being closely scrutinized. The railroad car service shows improvement, embargoes in the middle west having been lifted. Shipments of iron exceed production which means a steady reduction of the accumulated furnace stocks. Disappointment is noted on the pig iron production in Alabama in April. The Tennessee Coal, Iron & Railroad Co. blew in a furnace the latter part of April and the Trussville furnace went in this month.

Rush Cars to Coke Regions

Government Continues Order to Railroads to Supply 100 Per Cent Service—Operators Unable to Use All Equipment Furnished

Pittsburgh, May 14.—Large supplies of cars are being furnished to the Connellsville coke region. The Monongahela railroad continues to receive a 100 per cent supply by reason of the government having continued its order asking that this quota be furnished. An order was issued recently so that a shipment of coke for Peru would be moved forward at once without interfering with fuel supplies for blast furnaces. The government apparently has continued the order to make certain that manufacturers of pig iron will not run short. The supply on the Pennsylvania railroad also is large and today it was 98 per cent. Coke producers have not been able to take full advantage of the improved supply of cars, but will be more nearly able to do so soon when they will have built up their organizations. It now is the belief that the Connellsville region in the near future will be on a producing basis of 75 per cent of the car supply and this perhaps will mean complete supplies of coke for all furnaces.

Price Question Raised

Boston, May 13.—A very interesting situation has developed in the local coke market as a result of the recent order of the fuel administration with regard to New England coke supplies. A very strong effort is being made to book orders, but it cannot be said that users are falling over one another to stock up. Those having contracts for Connellsville coke, indeed, are inclined to hold back to see whether or not they will have to make fresh arrangements as to prices, or will be given the equivalent of their contracts in local by-product oven coke at the price of their contracts. The price of the local product is $13.45 per ton f.o.b. ovens while that of most of the Connellsville fuel under contract is from $10.45 to $10.65 delivered. The difference in the delivered price is a matter from $4 to $5 a ton, and as the prices of castings are based on cheaper coke than can be had after May 15, it makes considerable difference with the foundries. There is a disposition on the part of these foundries to hold off purchases for the present, especially as the belief is fairly general that the local product is higher than it should be. Some Connellsville coke is reported to have come through all right, but there are equally as many cases where it has been commandeered at New England gateways.

Domestic Fuel Bought

Cincinnati, May 13.—Domestic coke has been purchased quite freely of late, but the bulk of the fuel and the inadequate storage facilities of consumers prevents any large accumulations. Foundry coke is contracted for in very small quantities because the ovens are not able to take on much new business. The easing up of transportation difficulties is having some effect and the foundries are making few complaints, except as to the quality of the fuel furnished. This does not seem to be a matter that the producers can remedy.

Some By-Product Sold

St. Louis, May 11.—Developments in the coke market here this week have been entirely negative. Aside from sales of small surplus tonnages made quietly by local by-product ovens, no selling has been done. These plants have virtually their entire outputs contraced for over the third quarter, and the fuel sold recently represented an accumulation due to embargoes and other delays in transportation. Representatives of eastern and southern producers report their principals have nothing to offer, and are hard put to it to meet contract obligations. Several leading oven interests in the Connellsville district which largely supply this market with 72-hour foundry coke, have advised customers they are so far behind on deliveries that nothing need be expected this month.

More Tonnage is Cry

Birmingham, Ala., May 14.—On all sides in the Alabama market there is a cry for more coke. The maximum production has about been reached with those ovens in condition to be operated. Shipments out of the district are about the same as they have been for several weeks. Contracts are being filled as transportation can be obtained. Some of the local consumers are worrying over future prospects. Plans continue under consideration for some increase of production. The Sloss-Sheffield Steel & Iron Co. has plans for a by-product plant. Progress is reported on the 154 additional ovens at the Koppers by-product plant of the Tennessee Coal, Iron & Railroad Co.

No Changes in Scrap Now

Committee Decides Against Any Price Revision Before July 1—Recommends Cost Price be Put at Foundry Iron Level

FOR COMPLETE SCRAP PRICES SEE PAGE 1282

Philadelphia, May 14.—No changes in old material prices are to be recommended by the subcommittee on scrap of the American Iron and Steel institute until July 1, according to a decision reached at a meeting held in this city last Friday by members of that body. The question of a reduction in the maximum price of cast scrap now fixed at $34 delivered for No. 1 quality was considered at the meeting. While it was decided that price action on any grade should be deferred until July 1, it was recommended that the price of cast scrap should be on a level with No. 2 foundry iron at the delivery point. It is believed that this arrangement will operate so that consumers who have had difficulty to get cast scrap may be given access to available supplies. It was pointed out that on the Pacific coast the foundries are finding it almost impossible to get sufficient scrap at present prices and they are paying from $47 to $48 a ton delivered for No. 2 foundry pig iron as the present maximum price. The only activity in the local scrap market concerns deliveries on old contracts. The steelworks are well covered and are showing no interest in the market. These contract requirements, however, are taking up all the steel scrap coming out. In fact there is no accumulation in any grade of scrap.

Market Becomes Active

Pittsburgh, May 14.—Due to the allowance by the war industries board of a 3½ per cent commission on sales as a compensation, the market for iron and steel scrap in this district has become active. Inquiries are numerous and dealers have been able to find supplies in excess of those reported to exist. Inquiries are coming from a number of mills and buying direct from producers appears to have come to an end almost altogether, the business being done through dealers and brokers. The market for heavy cast scrap is fairly active and is weak at the maximum of $29 at which a sale of 4000 tons plus a commission has been made. The market for cast scrap for cupola use is weak and is quoted between $32.50 and $33, delivered, against the maximum price of $34. Consumers are objecting to paying a price in excess of the maximum of $33 for basic pig iron. Heavy melting steel is in most active demand and one of the largest sales involved 7000 tons which went at $29, delivered, plus commission. Weakness prevails in machine shop turnings which are quoted at $18 to $19, plus commission. One recent sale involving 3000 tons is understood to have been made at $18.50, delivered. Cast borings are firm at the maximum of $19, delivered, at which 3000 tons have been sold to a consumer in the Pittsburgh district.

Transactions Remain Light

Cincinnati, May 13.—The situation does not seem to clear up as fast as dealers wish. Transactions are light, with the exception of No. 1 wrought and also No. 1 machinery cast. These grades have been in demand and stocks are not as large as has been stated. Cast borings and steel turnings are a trifle stronger but are unchanged in price. The settlement of the commission question has had some effect in brightening the market, but present market quotations are very close to the limit of what buyers will pay.

Demand Well Distributed

Boston, May 13.—There continues to be a good and rather well distributed demand for scrap in this market, with prices firm owing to moderate supplies. Local foundries want far more cast scrap than is available. Wholesale dealers' paying prices per gross ton f.o.b. cars, shipping points, follow: Wrought No. 1, yard long, $29 to $30; horse shoes, $29 to $30; cotton ties, $22 to $23; stove plate, $21 to $22; No. 1 machinery, $31 to $32; No. 2 machinery, $27 to $28; car axles, iron, $42 to $43; steel, $42 to $43; rerolling rails, $30 to $31; iron boiler plate, $33 to $34; bundled barrel hoops, $16.50 to $17.50; wrought iron pipe, new specifications, $28 to $29; steel rails, $25 to $25.50; No. 1 railroad steel, $25 to $25.50; heavy melting steel, $24.50 to $25; axle turnings, $20 to $21; machine shop turnings, $14 to $15; cast borings, $15 to $16; drop forge trimmings, $22 to $23; cast iron car wheels nominal in lack of offerings or sales.

Heavy Melting in Demand

Buffalo, May 14.—The market for iron and steel scrap in this territory continues strong, with no change in the price schedule. There is a very strong demand for heavy melting steel and in addition, there is a heavy call for low phosphorus scrap and machine shop turnings. This latter demand has been the feature of the past week. The demand continues good on practically every other grade. Scrap is moving freely with practically all the heavy melting steel produced in this district going to local consumers. One of the developments the scrap trade will face in the near future is the increase in freight rates. The effect on distribution will be rather important.

Weakness at Cleveland

Cleveland, May 14.—Weakness continues the dominating note of the Cleveland scrap iron and steel market. Practically all grades are lifeless, and those in which a fairly plentiful supply is on hand—such as turnings—are in no demand. Heavy melting steel still is scarce and purchases in more than two and three-carload lots are rare. Dealers believe trading will be at a low ebb until the latter part of June, when contracting will be resumed. Shipments are going forward at good pace and transportation facilities are easier than at any previous time this year. Some dealers, who say they have repeatedly bid at government maximum prices for scrap, say they have had no results, and are wondering if material is changing hands at a figure in excess of the top figure allowed. Dealers generally are with foundrymen in their endeavor to have the $5 differential on cupola-size cast removed.

Speculation is Absent

Chicago, May 14.—Fixing a maximum price and allowing a commission has practically removed the element of speculation from the scrap iron and steel market and has resulted in making it comparatively quiet. Inasmuch as the consumer knows to a certainty that his price will be the same for weeks to come on such grades as are scarce and at a maximum, he is not compelled to buy as a speculation and takes only sufficient tonnage to keep his reserve at a safe point. Thus buying for future delivery as was done formerly in heavy tonnages at intervals has almost disappeared. On the other hand, sellers of scrap do not hold their material nor rush it to market in accordance with their judgment of price movements, but sell it steadily as it is produced or gathered and thus make the market more stable. Heavy steel, malleable and busheling grades are strong, with others lagging somewhat behind. All offerings are taken readily and consumers are buying steadily. Railroad offerings are only fair. The

Chicago, Milwaukee & St. Paul offers 1250 tons, including 500 tons of No. 1 cast, the Chicago Great Western 850 tons and the Chicago, St. Paul, Minneapolis & Omaha 580 tons.

Cast Becomes Scarce

New York, May 13.—A good volume of demand prevails for virtually all grades of scrap in the New York market at this time. Foremost in point of demand, however, is cast scrap, which continues to be eagerly sought after by foundries. As a result supplies of this material are exceedingly scarce and dealers and brokers are careful not to book business unless they have stock right at hand. Stove plate has been bought by some brokers during the past week at as high as $23, New York, although the majority have found sufficient supplies of this grade obtainable at $22.50. With the exception of machine shop turnings and clean cast borings, which have gone up 50 cents to a range of $16 to $16.50, all grades are holding virtually unchanged.

Some Business is Released

St. Louis, May 11.—A fair amount of scrap business, which had been held in abeyance pending the decision on dealers' commissions, was consummated this week, but otherwise the market has been quiet and featureless. A few sales between brokers were reported. Large melters are not buying, most of them being covered well into the last half. There continues a fair inquiry for heavy melting steel and for several of the mill grades. Machine shop turnings are slow with the supply ample. Prices in the main are well under government maximums, so that the 3½ per cent commission privilege has not been exercised to any great extent as yet.

Stocks Still Dwindling

Birmingham, Ala., May 14.—Southern iron and steel scrap dealers are delivering steadily on old contracts and stocks on hand are dwindling. Country scrap is not coming in as liberally as before and the outward movement is at a greater pace than the incoming supply. Dealers still report the market uncertain with southern consumers not willing to pay maximum prices. Activity in the north, east and west is expected to be felt in the south. Opinion is expressed that the scrap market may continue in the uncertain stage for 60 days yet, until the government revises pig iron quotations again. Some of the large melters of scrap in the home territory are not operating so well. Failure of country scrap gatherers to bring in stock are being felt.

Plants Pile Shell Steel

Insufficiency of Heat Treatment Facilities Obstructs Production by Munition Makers—Semifinished Shortage at Worst Stage

Youngstown, O., May 14.—Lack of heat-treating facilities continues to hamper shell-steelmakers. A large shellmaker in the Cleveland district because of limited capacity for heat-treating has stopped all shipments of shell steel by a company in this district. Material has been delivered to this plant so fast that a larger stock than can be handled in the near future has accumulated in its yard. This maker turns out more shell blanks in a day than can be heat-treated in his plant in the same time. Consequently, some are being sent to Pittsburgh and are heat-treated there. Approximately 37,000 tons of the 300,000-ton British shell-steel order which has been under allocation for the last month has been rolled. This steel was primarily intended for the United States government, but was rejected on account of the manganese content being under standard. It, however, met the British specifications. Shortly after the outbreak of the war, the mills in this country adapted themselves to the making of shell steel under British specifications which called for a heavy-walled blank. The mills were slow in meeting the United States specifications because they called for a thin-walled blank and were extremely strict in their physical tests of ductility, elongation and tensile strength. A majority of the mills now are coming to the point where they can meet the government specifications in a satisfactory manner and production is increasing daily. Sheet bars continue exceedingly scarce. One sheetmaker was forced to close down one jobbing mill and two finishing mills on this account. Since transportation difficulties have increased makers not self-contained are finding it difficult to keep more than a two or three-days' supply of sheet bars ahead. The scarcity has been so pronounced that high-carbon bars are now being converted into sheets.

Discards Only Sales

Philadelphia, May 14.—Sales of shell steel discards remain the practically only activity in the semifinished market. Offerings of billets and other semifinished forms except occasional off-heats are lacking.

Tonnages Sought Eagerly

Pittsburgh, May 14.—Consumers of semi-finished steel continue eagerly to seek tonnages in this district. Producers are completely sold up and they have no offerings to make. Some sellers are scouring the country in an effort to find steel for customers. Makers of plates have redoubled their efforts to get slabs to work up into material for the shipbuilding and other government requirements. Sheet bars are in especially strong demand by makers of sheets and some tin plate producers also are seeking good-sized tonnages. Active inquiry exists also for billets and the market for discards has become so narrow that there do not appear to be any sizable tonnages available. Some makers whose melting capacity exceed their rolling capacity are furnishing ingots to slab mills producing steel for plates. Some makers again have small lots of wire rods and are selling them to their regular customers. One producer during the past week sold 300 tons at the government price of $65, Pittsburgh.

More Gun Steel Needed

Cleveland, O., May 14.—A producer of ordnance in this territory has received additional contracts for guns for the navy department which will call for 3500 to 4000 tons of nickel steel. This business will go to a leading producer in the Pittsburgh district who has been furnishing material of this character to this consumer. A leading producer of munitions in this territory is putting in operation additional capacity which increases its output to 90,000 3-inch shells daily. Buyers of sheet bars who have canvassed the market with small results for steel of practically any character, whether odds and ends or discards, are in a very serious predicament. Some of them are on the verge of shutting down for lack of steel. One mill in this district may be closed this week.

Shortage Cuts Strip Output

Pittsburgh, May 14.—Shortage of steel is hampering the production of cold rolled strip tonnage good-sized lots of which are being taken by the government. Stocks which makers had on hand are now almost exhausted. Curtailment of the output of automobiles will temporarily shut off business in this line for makers of strip steel but will put them in a position to supply larger quantities for the government.

Ask Buyers for Pledges

Mills Put Consumers on Honor to Order Nothing But War Tonnage—Shell Bar Awards Reported Near

Cleveland, May 14.—Leading producers pledged to furnish the government 100 per cent of their output now are calling upon consumers equally to obligate themselves not to order out material except for war purposes. This means that the consumers are being called upon to pledge their fullest co-operation to the mills in the same manner that the latter have put themselves on record with the government. With the consumers formally committed to this policy, the mills will not insist on exacting requirements of technical proof that the material is for war use before shipments are made. The bar market is totally free of any business except that relating to war. An inquiry for 500 tons of rounds for time fuses is out from a local plant. It is learned that some implement manufacturers in this district are in a very comfortable position on their requirements through stocks which have been gradually accumulated. One consumer of this class now has practically enough steel on hand to cover capacity operations for a year and a half.

Commercial Tonnage Dropped

Philadelphia, May 14.—As a result of the pledge recently given by all steelmakers, large additional government orders for steel bars have been accepted by certain mills which heretofore had declared they were obligated on all the tonnage they could handle. Because of their pledge they are now producing nothing but government steel. This has involved the dropping of much commercial tonnage. By so doing that have made room for more government work. Bar iron demand is quiet.

Government Lettings are Large

New York, May 13.—The distribution of orders for 15,000 tons of reinforcing bars to be used in the construction of the warehouse at the South Brooklyn army supply base, now is being determined by the quartermasters' corps at Washington. The orders for the bars will be let, in accordance with the directions of the quartermaster's department, by the Turner Construction Co., which has the contract for the construction of the South Brooklyn base. The Cambria Steel Co. recently received an order for 2500 to 3000 tons of reinforcing bars for the construction of the army supply base at Boston.

Expect Shell Steel Orders

Chicago, May 14.—It is understood from sources close to the government that distribution of a heavy tonnage of shell bars will take place shortly covering the requirements of this country, France, Great Britain and Italy. Each of the latter is said to require about 750,000 tons and the United States will need fully that quantity, making the total for this purpose between 2,000,000 and 3,000,000 tons. It is believed this tonnage will be allocated in the near future and will fill some mills beyond third quarter in this department. Present requirements of the government for steel bars are not as heavy as for plates and shapes, but still cover a major portion of the production of most mills. Inquiry for hard steel bars rerolled from rails is somewhat less than has been the case recently, buyers apparently realizing their inability to place further tonnage while the shortage in steel rails continues. Consumers of bar iron are not seeking contracts and the general situation is decidedly quiet as manufacturers show no tendency to press matters and are willing to let the situation rest. Inasmuch as distribution of orders for carbuilding material has not yet been taken up, no new business is coming from that source, although a large tonnage is expected to be required in bar iron, for the purpose of saving steel.

Operations are Heavier

Pittsburgh, May 14.—Production of iron and steel bars has increased and now is almost at capacity. Tonnages are being supplied only for the government, either direct or indirect. Good sized orders are being taken for this class of demand but purely domestic consumers are unable to cover their requirements. The buying of steel bars for the implement trade is expected to become heavier soon and this business will be given a good rating in the way of priority because of its essential character in connection with the conservation program. Car builders also will be given a favorable position on the books of makers and precedence has been given to the shipbuilding program.

Bolt Inquiry Heavy

Chicago, May 14.—Large inquiry for nuts and bolts continues and the government requirements for more than 100,000,000 as well as another involving several million, previously mentioned, have not yet been covered. In addition to these general manufacturers are seeking considerable quantities which makes this a most active market. Mills are unable to take all that offers and are already sold well ahead.

Entire Order Not Distributed

Pittsburgh, May 14.—The government has not made any further distribution among makers in connection with its requirements for 129,000,000 bolts. The orders on this lot which are placed went to mills which filled the allotments from stocks. Good-sized orders are being placed with makers of nuts, bolts and rivets, which are to be used in connection with government work. Mills are able to get steel bars where they are to be worked up into this class of business but for no other purpose. Operations are proceeding at 80 to 85 per cent of capacity.

Demand for Hoop Steel

Pittsburgh, May 14.—Makers of oil barrels continue to put out inquiries for hoop steel and this business is being taken by mills, wherever it is possible. Some mills report a scarcity of steel and for this reason are unable to fully meet requirements. Limited tonnages of bands also are being taken at the government price of 2.90c, Pittsburgh.

Shafting Being Bought

Pittsburgh, May 14.—Heavy tonnages of both large and small sizes of cold rolled shafting are being bought either directly or indirectly for the government. A considerable quantity is to be worked up into detonators, time fuses etc. Other large orders of similar character are about to be placed. Deliveries are being made in from one month to six weeks.

War Business

Will Have Right of Way to Warehouse Stocks

Chicago, May 14.—Following the lead of steel mills in pledging their entire output to the government, warehouses handling finished steel products have taken the same stand. All business not intended for direct or indirect government work is to be subordinated to government orders. One local warehouse has sent a circular to its customers containing the following request, to assist in giving the best possible service for war needs:

"We will do our utmost to handle the legitimate requirements of our customers, as in the past. Orders for mtaerial required for war work and public necessities will have prompt and immediate consideration, but all others must be subordinated to them. In order to avoid delay we ask that you send with all orders and inquiries all the information possible as to the ultimate use of the

material. If needed for government use, please advise government order number and state also under which of the following classifications the work comes: Ships, aircraft, munitions, military and naval supplies and operations. If material is not for government use, give us accurate and detailed information as to its ultimate use, as there are many most essential industries, necessary to the welfare of the country today, whose requirements should be given every consideration after the needs of the government."

Jobbers are Worried

New York, May 13.—Leading iron and steel jobbers in this district have signed the pledge which requires that they assure themselves that all iron and steel which they sell is to be used for government purposes. Some of the larger interests, however, state that not all of the smaller jobbers are regarding the government's needs so seriously. They say that they frequently come across instances where smaller jobbers are selling to non-war consumers, and where they often are making sales at prices higher than the fixed maximum.

Shipments Gain

Movement of Lake Superior Iron Ore Approaching Normal

Cleveland, May 14.—Iron ore shipments are increasing. Boats are being worked out more rapidly both at loading and unloading ports. As a result the congestion at upper lake ports which has been slowing down shipments, is being relieved. Vessels are rapidly approaching the summer schedule.

Many shipments are expected to total more than 7,000,000 tons, an increase of 1,000,000 tons over May of last year. Water levels are lower this year introducing a restricive factor in the sizes of cargoes.

Virginia furnaces will receive more lake ore this year than at any previous time. Contracts already made provide for the delivery of 250,000 to 300,000 tons to Virginia furnaces in 1918. With this ore, the output of Virginia stacks is increased 25 per cent.

Blanks will be sent out semimonthly to all consumers of Lake Superior iron ore requesting detailed information on stocks on hand, receipts, and consumption. In this way a revised check will be secured every two weeks as to the actual minimum requirements of each stack and the problem of adjusting the supply to the demand will be simplified. Doubts are expressed by some vesselmen regarding the fleet's capacity to carry within 7,000,000 to 8,000,000 tons as much ore as last year.

Labor Worries Plate Mills

Shortages Begin to Hamper Production in East—Government Rebukes Mills for Accepting Orders Without Priority Certificates

Philadelphia, May 14.—Labor shortage rapidly is developing as a new obstacle to maximum plate production among eastern mill. Producers are giving this phase of the situation earnest consideration. Government plate allotments of the week were larger than in previous weeks. Round tonnages were placed for chlorine tanks, ships, etc., and even larger orders are expected shortly. One eastern mill received 30,000 tons additional from the shipping board. In several instances since the recent meeting of the steelmakers at New York the mills have accepted direct from consumers plate orders for urgent government requirements for which priority licenses had not been secured. It is learned that the government protested emphatically against this action in order that hereafter no plates should be booked except on priority orders. This means that the government and not the mills will determine the importance of war business. Many users of plates have been unable to secure priority rating although they believe they are entitled to it. The oil industry which demands plates for storage tanks, is one of these.

Wait for Government Action

Pittsburgh, May 14.—Our builders are waiting for the government to make allotments for steel, lumber and other materials, so that they may be advised where to get their requirements before proceeding with construction work. Allotments for steel will be distributed under the direction of J. Leonard Replogle, steel director. Some mills which will be called upon to produce plates, shapes and bars for the cars probably will have to defer production on less pressing government contracts in order to supply car builders adequately and on time. Wheels for the heavier types of cars will be made of steel and for the lighter types will be of gray iron. Difficulty may be experienced in getting ample tonnages for wheels. Plate mills are engaged altogether on government work and are not accepting any other kinds of business.

To Place Boiler Steel

Cleveland, May 14.—From 3000 to 4000 tons of boiler steel for the 66 boats awarded the American Shipbuilding Co. by the shipping board, are still to be placed. This tonnage was not included in the 90,000 tons of hull material placed with Pittsburgh and Chicago mills covered in last week's report. Nothing but priority tonnage receives attention from the mills and their deliveries are more uncertain owing to the heavy tonnages for war demands already on the books.

Ship Demands Heavy

Chicago, May 14.—Demand for steel plates for shipbuilding continues to hold first place in the steel market, with tonnages being constantly divided among mills, both for the Emergency Fleet corporation and for shipyards on the lakes and on the Pacific coast. A representative order recently placed in the west involves 4500 tons of plates and shapes for a yard at Duluth. Word comes from Washington that still larger tonnages for ship work are to be divided among mills in the west for use by western shipyards, and that considerable tonnage will be required for delivery during third quarter. Most mills in this territory are already filled practically through third quarter, and it is a puzzle how the material will be provided. With allotment of tonnage for railroad car construction imminent, it seems to the observer that some careful planning will be necessary to avoid conflict between claims of shipbuilders and carbuilders. It is learned from a Washington source that the material for the 30,000 cars to be built by the American Car & Foundry Co. will be distributed shortly for delivery from June 30 to Nov. 1. The plans provide for making much of the steel in the west which will present a problem to the mills because of the heavy obligations already on hand.

Aircraft Aid Appointed

Washington, May 15.—Archer A. Landon, of Buffalo, who has been appointed director of the division of production of the aircraft board, already has assumed the duties of that office here. As vice president of the American Radiator Co., he has gained much business experience both in this country and in Europe. John D. Ryan, director of aircraft production, in commenting on the appointment, said: "It is believed that Mr. Landon's wide experience and great ability will materially advance the production of aircraft.

Shape Huge Building Plans

Government Will Require Great Tonnage for Additional War Construction Not Yet Announced—Commercial Business Put Aside

Pittsburgh, May 14.—The day of the purely domestic consumer in steel seems to have passed. For at least six months the government will take 100 per cent of the output of the whole industry and it may take the full production for an even longer period. Producers have learned this with surprise but it has come from authorities who are in a positive position to know what they are talking about. Perhaps nothing indicates better than the situation in the fabricating market, the requirements presented are to be presented by the government. During the past week, fabricators have had a rush of inquiries coming to them from private consumers. When steel mills were sounded out the answer invariably came back that the mills either would not book a pound of this business unless it was for the government or they would accept the business tentatively, without promising the time of delivery or, that it would be rolled at all. It is believed that the government is about to enter upon various activities involving steel requirements greatly in excess of those already announced. Over and above the program which has been or is about to be mapped out for enormous tonnages of shell steel, plates, shapes, bars, pipe, rails, etc., for itself and the allies, it is understood that additional and extremely large requirements are to be called for in connection with building and equipping ordnance plants, terminal warehouses, fabricating shop, by-product coke ovens, and other undertakings in connection with war work.

Need Navy Yard Tonnage

Philadelphia, May 14.—Government business continues to monopolize the structural shape market. A number of new structures for the League Island navy yard are up for action including a power house, two transformers building, and an extension to building No. 25.

Need Tonnage for Piers

New York, May 13.—Although estimates have not yet been fully worked out, present expectations are that about 20,000 tons of fabricated steel will be required for building the pier sheds at the South Brooklyn army supply base. The contract for the construction of this base has been let to the Turner Construction Co. The warehouse at this base will be built of reinforced concrete. About 15,000 tons of reinforcing bars will be required for the job. Only a few structural contracts, all involving railroad bridges or structures for the government, were included in the lettings in the eastern structural market during the past week. The only new jobs up include the army supply base at Norfolk and buildings for the signal corps at San Diego, Cal. On both of the latter projects bids now are being taken.

No Building in West

Chicago, May 14.—Following the tight rein placed on construction work in order to conserve steel for war purposes, new building in the west is practically done away with. Requirements of shipbuilders involving considerable tonnages of structural shapes keep mills busy and occasional building projects which have a direct relation to the war are allowed to slip through.

CONTRACTS AWARDED

Building at 817 South Wells street, Chicago, for Wells, Fargo & Co., express, 169 tons.

Engine repair shop, for the Bingham & Garfield Railway Co., Magna, Utah, 126 tons, to the Kansas City Structural Steel Co.

Synchronizer building in Maryland for government, 200 tons, to Lackawanna Bridge Co.

Bridges for Southern railroad, 1400 tons, to McClintic-Marshall Co.

Kent avenue power house, Brooklyn, 600 tons, to American Bridge Co.

CONTRACTS PENDING

Terminal at Norfolk, Va., for quartermaster general's department, 1800 tons, bids being taken.

Buildings for signal corps, San Diego, Cal., 1200 tons, bids being taken.

Extension to building No. 25, League island navy yard, Philadelphia, bids being taken.

Power house and two transformer buildings, League island, Philadelphia, bids being taken on the steel by the general contractor, the Turner Concrete Steel Co.

Sheets Only for War Use

Mills Producing Only Essential Tonnage—Heavy Requirements for Government Cars—Steel Shortage More Serious Factor

Youngstown, O., May 14.—A few weeks ago sheet makers in this territory predicted that before long there would be no sheet bars available for domestic purposes. That time is here now. Practically every bar is being used for government requirements and especially those which are converted into galvanized sheets. Nearly every mill in the valley is now producing and shipping galvanized sheets for the government strictly on a 100 per cent basis. While makers are not rolling black and blue annealed for the government at 100 per cent they are supplying 100 per cent of their war obligations for these grades. Direct export business is a thing of the past. Mills which were unable to roll all orders of this kind on account of the unusually heavy government demands now are producing such tonnages with the government's permission whenever the material is for war purposes. So scarce have domestic sheets become that regular customers are making special trips from distant cities begging sales managers for any size whether primes, seconds or wasters. Some users even buy oversized sheets and willingly stand a loss of 20 to 30 per cent in waste. A San Francisco jobber who supplies the Emergency Fleet corporation called on one sales manager and said he would take every sheet on hand. Sheet bars never have been as scarce as they are now. Sheetmakers not self-contained are finding it extremely difficult to locate even small tonnages. As a result, one maker has been obliged to close down one jobbing mill and two finishing mills. Another maker has three finishing mills idle on account of a scarcity of labor. Most mills are running from hand to mouth. Even sheet bars in transit are included by some mills in their rolling schedules. Mills are willingly buying high-carbon sheet bars.

Cars Will Require Tonnage

Pittsburgh, May 14.—The government continues to place orders for sheets, although the tonnages being booked are not so heavy. The output of mills has been restricted greatly owing to a shortage of sheet bars and this is causing considerable concern on the part of the trade. No business is being taken except that for the government, either direct or indirect. Large requirements will be necessary in connection with the 45,000 box cars which have been bought by the railroad administration.

Demand Continues Heavy

Chicago, May 14.—Although sheet mills are unable to obtain sufficient steel to keep production up to capacity, demand for all grades, both domestic and export, continues strong.

Permit System

For Ferromanganese Over 70 Per Cent May Follow

New York, May 13.—A new ruling by the subcommittee on ferroalloys that consumers of ferromanganese must obtain a war board permit to buy metal more than 70 per cent content may be adopted, it is reported. This is in line with the efforts to conserve shipping and stimulate production. The committee will meet Wednesday. Numerous and vigorous protests to Fred B. Peterson, director of the bureau of imports of the war trade board, by consumers and representatives of the English makers of ferromanganese and spiegeleisen, and by the subcommittee on ferroalloys, it is thought, may result in a modification of the recent order prohibiting the further importation of these metals. The order prevents shipment of ferromanganese from England for which licenses already had been granted. It became effective on all shipments from abroad after May 13. It is known that English makers secured licenses for and shipped large tonnages last week. One maker alone shipped more than 1300 tons ferromanganese.

Demand for spiegeleisen and ferromanganese has improved somewhat. The Crucible Steel Co. of America has put out an inquiry for 4000 tons of 16 per cent and 1000 tons of 70 per cent metal. The Carbon Steel Co. has bought 500 tons of 70 per cent metal and the Youngstown Sheet & Tube Co. 900 tons of similar quality. Other new inquiries are out. Prices continue unchanged on ferromanganese at $250, delivered, for 70 per cent, with a premium of $4 per unit for each unit above 70. Spiegeleisen is quoted at $75 to $77, furnace, for 16 per cent for spot and at $70 for futures. Several hundred tons of 18 per cent have been sold for prompt shipment at $80, furnace. On 50 per cent ferrosilicon prices are easy at $155, delivered, for spot, and $150, delivered, for contract. Ferrotungsten is quiet and unchanged at $2.20 to $2.30, furnace, per pound for 70 per cent metal.

Market Becomes Stronger

Pittsburgh, May 14.—Plans for conserving manganese ore have had the effect of strengthening the market for ferromanganese and spiegeleisen. While 70 per cent ferromanganese continues to be quoted at $250, delivered, reports in the trade indicate that the price is going to be advanced soon. The level for spiegeleisen has increased and 16 per cent now is quoted at $75 to $80, furnace, for prompt. One maker is asking the latter figure for either spot or contract. Consumers in general are not longer making complaint about taking 70 per cent ferromanganese. It is reported that the government may issue an order prohibiting the manufacture of a higher grade alloy, except in connection with particular requirements. Inquiries for ferromanganese and spiegeleisen again are brisk.

Great Tonnage

Of Tin Plate Wanted by Government For Food Conservation

Pittsburgh, May 14.—Operations of tin plate mills are estimated at 95 per cent of capacity. The output has been restricted somewhat at some mills, owing to a shortage of sheet bars. Considerable relief from a shortage of steel will result from the placing in operation of the sheet bar mill of the Trumbull Steel Co., Warren, O., which is understood will begin rolling about the middle of next month. Shipments of tin plate are satisfactory and stocks in warehouses generally have been reduced to a normal basis, although in some instances they still are large. The program of the food administration calls for a huge tonnage of tin plate for containers to meet the demands that will be necessary by reason of the large acreage planted, but inasmuch as the success of the crops is dependent upon weather conditions, it cannot be accurately determined just how great the amount will be.

May Take Full Output

Youngstown, O., May 14.—It is rumored that in the near future all tin plate made in this district will be taken over by the government and the mills will be unable to supply the domestic trade until the canneries are accommodated. One producer is making tin plate to be used for oil cans and expects to be informed soon by the government to turn this tonnage to food containers exclusively.

Domestic Tonnage

Being Booked by Wire Mills Subject to Government Needs

New York, May 13.—Government demand for wire products now is veering away from wire nails and involves on an increasing scale wire rope and all kinds of wire for manufacturing purposes. Large tonnages of wire for use in gas masks, for the manufacture of gun springs and wire parts for all kinds of ordnance, are being distributed. Business of this character now is accounting for the larger portion of the current output. Government demand has not yet been so large as to call for 100 per cent of the output of the wire mills, and consequently commercial orders continue to be booked.

Take Government Business

Pittsburgh, May 14.—Wire mills in this district are taking government business entirely except now and then some producers find they have small lots available for their regular customers. Specifications on domestic contracts are coming to mills from private consumers and some of these, after being pared down, are being filled. The government is a particularly heavy buyer of nails. In addition to the 49,000 kegs of nails recently taken by the Pittsburgh Steel Co. for the quartermaster's depot in Washington, it is understood that a lot of 47,000 kegs has been distributed among a number of makers. The committee on wire of the American Iron and Steel institute is about to allot 6000 tons of either galvanized or painted wire for the Italian government, which it is understood it will turn over to France.

Fair Tonnage

Of Cast Pipe Placed by Buffalo—Government Buying Wrought

New York, May 13.—A lot of 2100 tons of 36-inch pipe on which bids recently were received by the City of Buffalo have been awarded to the United States Cast Iron Pipe & Foundry Co. With this tonnage out of the market, little in the way of new municipal inquiry is pending in the east. Miscellaneous demand either directly or indirectly connected with the government, is being noted in the market on a gradually increasing scale. Private inquiry, however, which is far below normal, is shrinking still further, until now it is a relatively small factor in current transactions. Prices generally are firm at prevailing maximum levels.

Government Gets Tonnage

Pittsburgh, May 14.—Large tonnages of pipe for lines being laid for the government have been taken by mills in this district. The principal size taken in this connection is 8-inch. The government also has taken iron and steel pipe for use both in this country and abroad. Producers are sold far ahead on lap weld sizes and most butt weld sizes although in some of the latter, tonnages are being booked for delivery in two and three months.

Pittsburgh Gets Great Gun Plant

Neville Island in Ohio River Will Be Site of Arsenal Which Will Outrival Krupp Works—Largest Size Cannon and Projectiles to be Produced—Construction Work Begun

WASHINGTON, May 15.—Construction work upon the new ordnance plant to be built and operated by the United States Steel Corp. at the request of the war department, is under way. Simultaneous with the selection of Neville island, in the Ohio river near Pittsburgh as the site surveyors began work on the 300-acre plot which will be the location of the greatest gun and projectile works in the world, outrivaling the Krupp works in Germany. Plans have been submitted by the corporation and practically have been approved by the ordnance department. Work will be pushed rapidly and estimates by experts place the completion date one year hence. Steel corporation officials will work in conjunction with the war department and will receive no remuneration for their services.

Eight-inch cannon are to be the main product of the plant, but other large caliber guns including 16-inch howitzers will be forged, machined and assembled in the plant. Other heavy artillery to be produced will include the 12 and 15-inch sizes. Projectiles of large sizes, high explosive shells and shrapnel will likewise be produced in large quantities, under the supervision of the Steel corporation, which will detail 10 experts from its organization for the purpose.

Cost is Fifty Millions

The cost of building the plant will probably exceed $50,000,000. It will be built around three units: A heavy artillery plant; a projectile factory for every large type of shell; a machine shop that in its way will be the greatest in size and equipment in the world. Since the site chosen is in close proximity to Steel corporation blast furnace production but not to steel works, the erection of new open-hearth furnaces either in the arsenal or in the immediate vicinity for the manufacture of ingots is contemplated. The nearest Steel corporation open-hearth plants are Braddock, Homestead, McKeesport and Duquesne.

This immense arsenal will be located at the east end of the 7-mile long island on ground owned by the Carnegie Steel Co., almost directly opposite McKees Rocks, Pa. The site has been lying idle for 20 years. It was purchased when the American Steel & Wire Co. planned to move its Chicago plant to Pittsburgh. That company commenced the construction of its new plant but the formation of the Steel corporation ended the project after one blast furnace had been completed. This is now the Neville island furnace of Carnegie Steel Co., as it was leased to the latter by the American Steel & Wire Co. in 1908.

Experts in Charge

Secretary of War Baker, in announcing the completion of the arrangement with the Steel corporation for the construction of the plant, said:

"A committee formed from officers of the corporation and its subsidiary companies, men fitted by education and experience, will be in immediate charge of the work. These men will receive no compensation. The plant is to be built, equipped and operated at the expense of the government by the United States Steel Corp. without profit. Cannon of the largest calibre will be manufactured, as well as heavy projectiles in large quantities.

"While the United States Steel Corp., like other steel manufacturers, are full of work and have always gladly undertaken production of finished materials wanted by the government, they were persuaded by the secretary of war to undertake this additional task which they patriotically agreed to do, and have placed their best energies and the strength of their economic position at the disposal of the war department."

Corporation Acts Quickly on Formal Appeal

New York, May 14.—Requests of the government to various steel companies at present not producers of ordnance to co-operate in the establishment of greater gun capacity resulted in the decision of the Steel Corporation to enter the ordnance field on a large scale. The new plant will manufacture cannon and projectiles of the largest sizes. Work on the construction is to start at once and the cost will be defrayed entirely by the Corporation. Judge Gary's official announcement that the Steel Corporation had decided to proceed with the work follows a month or more of informal discussions between the government and various steel producers. When the matter was brought to a formal stage, the officers of the Steel Corporation promptly agreed to lend the government their full and immediate co-operation. The Steel Corporation heretofore has not been a producer of ordnance.

Judge Gary's official announcement that the Steel corporation would engage in gun making at the request of the government is as follows:

At the solicitation of the secretary of war, the United States Steel Corp. has undertaken to construct and equip for and at the expense of the government, upon a site to be located in the interior of the country, a plant for the manufacture of cannon and projectiles of large sizes and in great quantities; and to operate the same when finished.

At best, the time required will extend over a considerable period and the cost will be large; but the work will progress with all practicable speed and economy in the use of money will be practiced. It is hoped and expected the results will be creditable to the country.

The work will be in the immediate charge of a committee consisting of a vice president and the comptroller of the corporation, and eight others designated from the officers, presidents or vice presidents of the various manufacturing subsidiary companies, and all selected because of their education, experience and peculiar fitness. This committee will keep in close touch with the building and operating organization which is being formed, and with the officers of the Steel corporation and with the war department.

Officers of the corporation and of the subsidiary companies will receive no compensation for their services.

Accurate books of account will be kept which, with all records, files and other documents and papers, will be open and subject to examination by government officials or other properly appointed representatives.

General plans are being rapidly prepared and will soon be ready for examination by the ordnance department or other bureau, and when approved, the corporation will be given a free hand in construction and operation, holding itself responsible for the faithful performance of the duty imposed by the terms of the contract.

The corporation, in consequence of the magnitude of its business, most of which, directly or indirectly, is in aid of the military necessities of the government and its allies, had hoped to avoid the necessity of engaging in work of the kind now entered upon, but was persuaded by the war department that it was imperatively required under existing conditions.

Detailed Orders

For Government Cars and Locomotives Now are Announced

Washington, May 14.—Details of the car and locomotive awards of the past two weeks have been obtained from the railroad administration and show the types of motive power and rolling stock to be built under the Williams economy plan which limits the manufacturer's profit to 5 per cent on the costs, with the provision that the administration gets the excess profit above that margin and the manufacturer stands the loss if it falls below.

Concerning locomotives, the description of the order is:

American Locomotive Co., 555, including 217 light mikado, 70 heavy mikado, 20 light mountain, three heavy mountain, 10 light pacific, 10 heavy pacific, 75 light Santa Fe, 28 heavy Santa Fe, 30 light 6-wheel switcher, 75 heavy 8-wheel switcher, 15 light 2-6-6-2 mallet and five heavy 2-8-8-2 mallet.

Baldwin Locomotive Works, 470, including 183 light mikado, 30 heavy mikado, 15 light mountain, two heavy mountain, 20 light pacific, 10 heavy pacific, 75 light Santa Fe,10 heavy Santa Fe, 20 light 6-wheel switcher, 75 heavy 8-wheel switcher, 15 light 2-6-6-2 mallet and 15 heavy 2-8-8-2 mallet..

As to the details of number and type of cars, the following shows their allotment:

American Car & Foundry Co.: 10,000 40-ton double-sheathed box; 9000 50-ton single-sheathed box; 5000 50-ton composite gondola, and 6000 55-ton hopper.

Standard Steel Car Co.: 2000 40-ton double-sheathed box; 5500 50-ton composite gondola; 5000 55-ton hopper, and 2500 70-ton low-side gondola.

Pressed Steel Car Co.: 6500 50-ton composite gondola; 5000 55-ton hopper, and 2500 70-ton low-side gondola.

Pullman Co.: 6000 50-ton single sheathed box and 2000 50-ton hopper.

Haskell & Barker Car Co.: 6000 50-ton single-sheathed box, and 2000 50-ton composite gondola.

Rallston Steel Car Co.: 4000 55-ton hopper.

Cambria Steel Co.: 3000 55-ton hopper.

Mt. Vernon Car Mfg. Co.: 4000 40-ton double-sheathed box.

Mangor Car Corp.: 1000 50-ton composite gondola.

St. Louis Car Co.: 1000 50-ton single-sheathed box.

Pacific Car & Foundry Co.: 2000 40-ton double-sheathed box.

Liberty Car & Equipment Co.: 1000 40-ton double-sheathed box.

Laconia Car Co.: 1000 40-ton double-sheathed box.

Bettendorf Co.: 3000 50-ton single-sheathed box.

Keith Car Mfg. Co., 1000 40-ton double-sheathed box.

Lenoir Car Works: 2000 40-ton double-sheathed box.

Barney & Smith Car Co.: 2000 40-ton double-sheathed box.

Propose Big Coke Saving

WASHINGTON, May 14.—Effective tomorrow, the fuel administration will inaugurate the coke zone plan for New England previously outlined in THE IRON TRADE REVIEW. The order embargoes shipping from New England all coke except certain consignments to be licensed to Albany, Cohoes, Green Island and Troy, N. Y., and forbids shipment into New England of foundry coke. New England, through the by-product plant of the New England Fuel & Transportation Co., at Everett, Mass., produces all the foundry coke required in its own states, but for petroleum coke and crushed coke for domestic purposes, licenses will be issued for certain shipments from Maryland, New Jersey, New York, West Virginia and Pennsylvania.

In addition, the coke division of the fuel administration has formally approved the plan by which the surplus coke from the by-product plant of the McKinney Steel Co., Cleveland, will be used by the Upson Nut Co. at Cleveland and the Upson company's supply, from ovens in the Connellsville region, will go to the McKinney furnaces at Scottdale and Josephine, Pa.

These arrangements by the administration are part of the general plan to curtail long hauls of coke and ultimately are to result in a general coke zoning system for the country somewhat similar to the coal zoning plan, only more largely made up of special instances similar to that involving the McKinney and Upson companies.

To Correct Consuming Methods

The fuel administration expects to canvass each industrial plant in the country in an effort to save from 25,000,000 to 50,000,000 tons annually in the nation's fuel supply. Announcement of this plan came with the appointment last week of Thomas R. Brown, Pittsburgh, as administrative engineer for the Pittsburgh district, and C. P. Billings as his special assistant. Other similar appointments will be made for other districts.

The administration hopes to be able to save large tonnages through correcting operating methods now in use. These corrections are to be made without delay or expense or new equipment, the administration says, and are to benefit the coffers of the companies involved as well as conserving fuel for other purposes.

Institute Program

Includes Paper on Relations of Trade Papers to Industry

Six major papers will make up the formal program of the fourteenth general meeting of the American Iron and Steel institute, to be held at the Waldorf-Astoria, New York, May 31. Five of these will relate to technical and manufacturing subjects. The sixth, which promises to be received with much interest, will deal with the relations of the trade papers to the iron and steel industry. B. S. Stephenson, Pittsburgh representative of M. A. Hanna & Co., who will present this paper, is peculiarly fitted by his experience to deal with the topic in a broad, practical fashion. For several years Mr. Stephenson was associate editor of THE IRON TRADE REVIEW at Cleveland and New York.

The program of addresses and papers is as follows:

Address of the president, Elbert H. Gary, New York.

The Electric Steel Plant at South Chicago, T. W. Robinson, vice president, Illinois Steel Co., Chicago.

The Design of the Modern Blast Furnace Stack, J. G. West Jr., general superintendent blast furnaces, Jones & Laughlin Steel Co., Pittsburgh.

The Modern By-Product Coke Oven and Its By-Products, W. H. Blauvelt, consulting engineer, Semet-Solvay Co., Syracuse, N. Y.

Effect of Phosphorus in Soft Acid and Basic Open Hearth Steels, J. S. Unger, manager, central research bureau, Carnegie Steel Co., Pittsburgh.

Conservation of Ferromanganese, papers to be arranged for by C. A. Buck, vice president, Bethlehem Steel Co.

Relation of the Trade Papers to the Iron and Steel Industry, Bertram S. Stephenson, M. A. Hanna & Co., Pittsburgh.

Discussions of each paper under five-minute rule.

The banquet will be held Friday evening. A buffet luncheon will be served during the Friday recess.

Storms Damage Plants

Chicago, May 14.—Recent heavy storms have done considerable damage to industrial plants near Chicago, some of which is causing interruption to operation. At the plant of the Republic Iron & Steel Co., East Chicago, Ind., three smokestacks were blown down at the bar iron mill, necessitating a shutdown for a week or ten days. At the Indiana Harbor works of the Inland Steel Co., an ore bridge was toppled over and will require two to three months for rebuilding. This is one of five bridges, so that the handicap will be only partial. At the plant of the Iroquois Iron Co., South Chicago, an ore bridge was also blown over.

Auto Output

Will Not Be Curtailed by Formal Order—License Japanese Plates

Washington, May 15.—Automobile manufacturers have received assurances from the war industries board that there is no truth in the report that there will be 75 per cent curtailment in the passenger car production. There will be no government order at all curtailing automobile production, at least from present indications. Automobile builders, however, have been given to understand that the question of materials and transportation is a serious one and that all government requirements shall come first. Therefore, there will be automatic restriction of all nonwar industry, due to inability to get sufficient material. In other words, these industries will take the steel left after government requirements have been taken care of.

It is learned that the war trade board has granted licenses for the exporting of a large tonnage of steel plates for the Pacific coast to Japan. These plates are being sent as part of the agreement by which Japan turned over to us a large tonnage of shipping. Much criticism is to be heard by reason of the delay in granting these licenses, as the agreement was made more than a month ago.

Ruling is Confirmed

New York, May 14.—Chairman E. H. Gary of the general intitute committee today issues following statement: "The war industries board has confirmed this committee's interpretation of the President's announcement of Dec. 28 that all deliveries iron ore, pig iron, bar iron, steel and steel products made on and after April 1 under contracts entered into on and after Dec. 28 shall not be invoiced at prices higher than maximum in effect at time of delivery, as specified in President's announcement March 27. It is hoped all buyers and sellers of any of the above products will be governed by this ruling."

Starts Another Bar Mill

Youngstown, O., May 15.—Officials of the Carnegie Steel here have placed the new 10-inch bar mill at the McDonald plant in operation. This mill will have a capacity of 600 tons of finished material per 24 hours. Like the 8-inch bar unit which has a capacity of 350 tons of bars per 24 hours, it is one of the most modern and complete bar mills in the country. Work is being rushed on the new hoop mill and from present indications it will be in operation in about six months.

Ferro Shortage

Next Winter Feared by Steelmakers—Rail Orders Placed

New York, May 15. (By Wire.)—High opinion in the steel industry is that next winter will witness a great shortage in ferromanganese. It is believed it is a mistake for the government to restrict as at present the amount of shipping allowed for manganese ore. England can send over considerable ferromanganese in the next four months if the imports restriction is removed. Beyond that time the English supply of ferromanganese for this country is problematical on account of the ore supply. England is depending to a growing extent on Brazilian instead of Indian manganese ore because of the difficulties in bringing in the latter.

The Cambria Steel Co. has been allotted an order for 20,000 tons of bessemer rails for France. The Steel corporation has taken an order for about 50,000 tons of bessemer rails for delivery next year to South Africa. Prices on rails have remained unchanged.

Names Executive Board

Philadelphia, May 14.—A meeting of the recently organized Merchant Pig Iron Distributors' association was held in this city today. President W. S. Pilling appointed an executive committee consisting of J. O. Henshaw, of Boston; L. H. Miller, of Reed, Fears & Miller, New York; Robert C. Lea, of Robert C. Lea & Co., Philadelphia, and T. C. Ward, of Hickman Williams Co., Pittsburgh.

Machinists and others who recently went on strike at the plant of the Savage Arms Co., Utica, N. Y., have returned to work.

The Non-Ferrous Metals

Copper Lead Spelter Tin

	*Copper	†Spot Straits, tin	‡Lead, New York basis	Spelter St. Louis basis	**Aluminum	Spot antimony
May 8	23.50	.....	6.70	7.00	32.00	13.00
May 9	23.50	.....	6.75	7.00	32.00	12.50
May 10	23.50	.....	6.75	7.25	32.00	12.37½
May 13	23.50	.....	6.80	7.25	32.00	12.25
May 14	23.50	.....	6.85	7.30	32.00	12.12½

*Government fixed maximum price for prime lake, electrolytic and casting copper, in ingots, pigs, slabs, etc., less than carloads, 24.67½c.
†No spot Straits tin offering.
‡Outside market, prompt shipment.
**Government fixed price for 98 to 99 per cent ingot aluminum in 50-ton lots; lots 15 to 50 tons, 32.10c; one to 15 tons, 32.20c.

New York, May 14.—The tin market continues strong, with metal extremely scarce. Realizing the seriousness of the situation, the economy board of the council of national defense is now holding conferences with representatives of various consuming industries in an effort to bring about only the most essential use. Chinese tin is available for spot delivery in small quantities at as low as $1.10, after having been as high as $1.25, New York, with metal for shipment at the Pacific coast holding at $1.06, New York. May shipment from China is quoted 98.50c to 99c. The situation at Batavia continues slightly unsettled, with the trade here as much in the dark as ever as to what may be expected in the future.

Improved inquiry from galvanizers and other consumers made for higher spelter prices during the past week. Prime western for prompt and May and June shipment advanced to 7.25c to 7.37½c, St. Louis. July is firm at 7.50c. Reports of early buying for the allies and some buying of grades B and C by the government also lent strength to the market. Brass special is holding strong at 7.62½c to 7.75c, St. Louis.

While little trading developed in lead, the market was somewhat stronger. This was due in part to the upward turn in spelter and to the growing realization that supplies in the east were none too plentiful. While this resulted in a slightly improved volume of inquiry, sellers were scarce and little business resulted. Lead in the outside market is now holding at 6.85c to 6.90c, New York, for prompt, and 6.75c to 6.80c for May and June shipment. The leading seller continues to quote 7c, New York.

Antimony sagged throughout the greater part of the week. Sellers at one time offered spot delivery as low as 12.12½c, duty paid. After cheap holders got rid of their metal the market moved up to 12.50c to 12.70c, duty paid, but today it again sagged to 12c bid, 12.25c asked.

Belief that there is little likelihood of a downward revision in prices after June 1 and that quotations might be set at a higher level resulted in a somewhat better demand for copper from private consumers. Sellers, on the other hand were scarce and little metal changed hands.

Aluminum continues dull and unchanged.

New Iroquois Furnace Now in Blast

Furnace Rated at 600 Tons Capacity—A Solid Armor of 1½-Inch Plates Encircles the Tuyere Breast—Elevator Permits Easy Access to Top of the Stoves and Furnace

TO build and put in operation within a period of 12 months a new blast-furnace unit of the largest size, complete with an ore dock and ore handling machinery, including extensive changes in the existing boiler and power houses, blowing equipment, ore bins, electric transmission, water mains and sewers, without loss of tonnage on other furnaces, is a record in these days of embargoes, transportation difficulties, and scarcity of labor and materials. This feat has recently been accomplished at the plant of the Iroquois Iron Co., Chicago.

Early in 1917 the Iroquois company decided to increase its pig iron production at South Chicago. Soon after a contract for building a new 600-ton blast furnace was awarded to Freyn & Co., Chicago. The new furnace was to be built in line with the two 400-ton furnaces which were erected in 1911-12. These furnaces were fully described in an illustrated article published in THE IRON TRADE REVIEW, page 49, Jan. 4, 1912. It was the expectation of the Iroquois officials to have the new furnace in blast when lake navigation opened this spring. Ground was broken on March 12, 1917, and due to the excellent co-operation of the owners, engineers and contractors, it was possible to blow in the furnace on March 5, 1918, or considerably ahead of the scheduled time.

The new stack was erected at one end of No. 4 cast house. The cast house roof afforded splendid protection for the work of excavating, pile driving and putting in the concrete foundation. It was left intact as far as possible. The work due to this protection proceeded without interruption during the winter weather. The excavation which was accomplished in record time by the Iroquois Iron Co.'s own labor forces, included the removal of 1500 cubic yards of reinforced concrete. All other excavating, piling and concrete work was done by the Great Lakes Dredge & Dock Co., Chicago.

The new blast furnace from the iron notch to the top ring is 92 feet high. It has a bosh diameter of 22½ feet, a hearth diameter of 18½ feet, and a cubical content of 25,000 feet from the bottom of the closed 13-foot bell to the iron notch. The 10 cast iron columns which support the steel plate mantle rest on a continuous cast iron sub-base. The hearth jacket is cast iron. It is of the segmental, water-cooled type, heavily banded. The tuyere breast shown in Fig. 11 consists of a solid armor of 1½-inch plates with openings for 10 tuyeres. The bosh is reinforced with eight bands, 1½ inches thick. The furnace shell, which is specially designed to meet modern furnace lines is surmounted by a Kennedy top dome. The latter, which is of heavy construction, is integral with the shell. The stock line of the furnace is protected by wearing plates of white iron. The furnace top is of the Brassert type, and is designed to decrease the production of flue dust. The design of the receiving hopper and throat was also worked out so as to give a correct distribution even when the charge is not revolved. The top allows of adustment and proper centering of both bells and hopper. This insures uniform wear on the lining and regular operation of the furnace. The uniformity of distribution on the big bell independent of the method of charging is effected by the McKee revolving mechanism. The gas from the top of the furnace

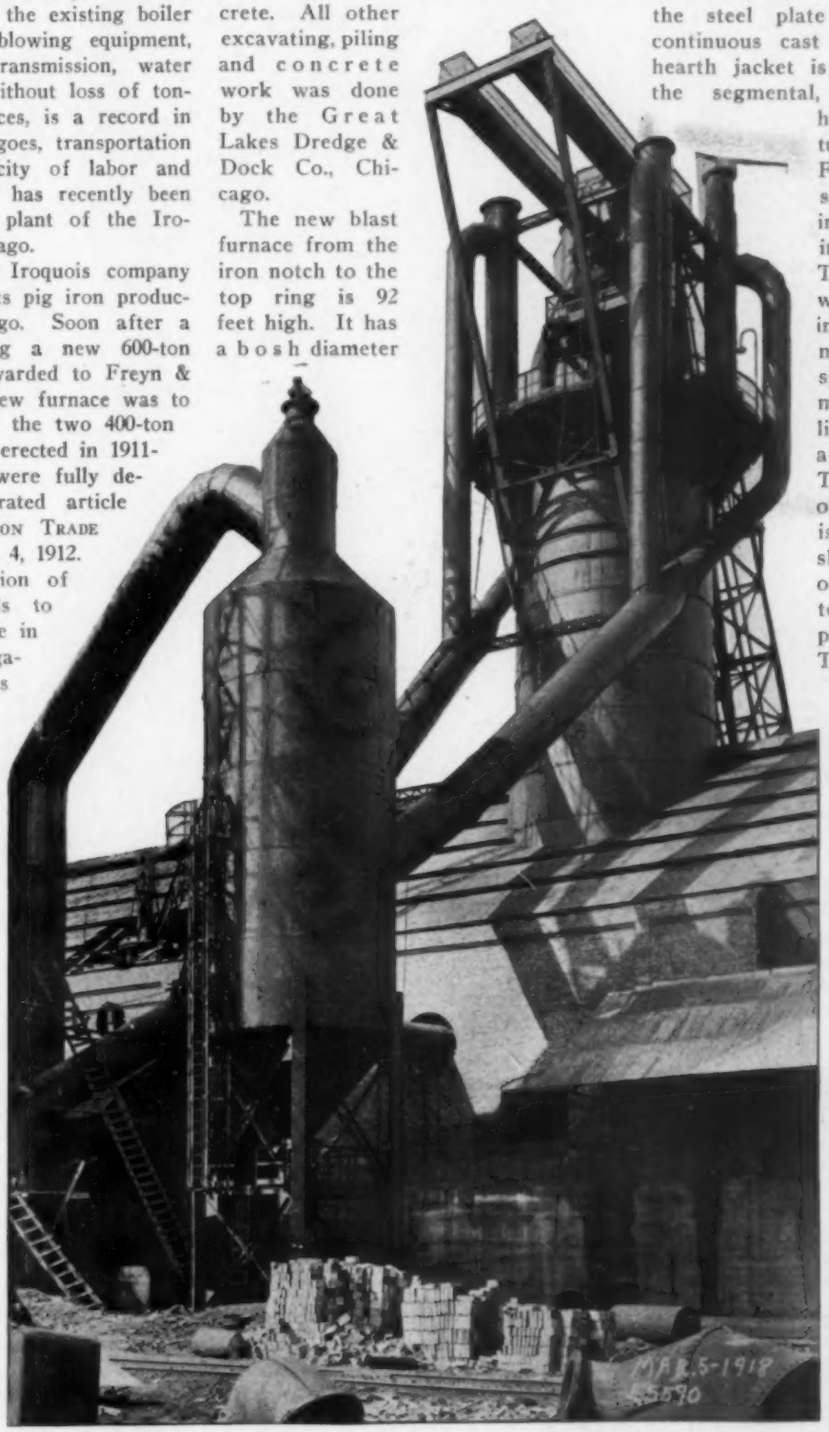


FIG. 1—TOP OF FURNACE SHOWING UPTAKE AND DOWNCOMER PIPES

passes into four uptake pipes, two of which are equipped with Baer safety explosion valves. There are four downtakes, each two combining into one unlined downcomer. The two downcomers which are clearly shown in Fig. 1 enter the dustcatcher radially. The gas, leaving the dustcatcher, passes through a 15-foot Brassert gas washer, and then through a 12-foot dryer, the clean, dry gas being delivered to the stoves and boilers.

The washer which is shown in Fig. 9 embodies the standard Brassert principle of two-stage scrubbing. In the first rough-cleaning stage the heavier portion of the dust is eliminated and the gas is primarily cooled. The second stage in the same tower effects the fine cleaning. The dirty gas which enters at the bottom meets a heavy spray of water from the hurdles above. Rough dust is precipitated and the gas saturated with water vapor. The latter is condensed on its upward travel, entrapping the fine dust and fume particles. The rough-cleaning stage is arranged to give a combined rain and contact effect in cleaning and cooling the gas. Channeling and stratification are prevented by the spacing and arrangement of the superimposed hurdle elements which retard the descent of water through the scrubber and give an increased time element for cleaning. In the second stage of fine cleaning, the gas at considerable velocity impinges against three successive, double rows of inclined baffles. These are set at an angle with spacing to insure a maximum impinging effect, and to overcome any back pressure. The effect of a dynamic or rotary washer is approximated at this stage. All water used in the second-stage cleaning is passed through specially designed spray nozzles in such a manner that the water and gas are forced into intimate contact as they impinge and travel through the baffles. The counter current effect is utilized to the fullest extent. The gas leaves the scrubber within a few degrees of the initial temperature of the entering water.

Experience with this type of washer has not only demonstrated satisfactory economy in operating and maintenance charges, together with economy in water consumption, but has shown favorable characteristics in amount of care required. A constant supply of water is essential for successful operation. With the water supply assured, the scrubber remains clean and no inspection is required during a blast campaign. There is no mechanism to require attention. The washer is built large enough to handle heavy dust loads on a slipping furnace. The large number of these scrubbers which have been in operation for a number of years have offered opportunity for inspection at the end of various furnace campaigns. They have invariably been found clean after a number of years service. Many hot blast stoves which use the gas from this type of scrubber have similarly been inspected and have been found to have clean, undisintegrated checker work and joints.

Three 2-pass stoves, 22 x 100 feet, supply the hot blast. A passenger and freight elevator which has a capacity of 1500 pounds and ascends 150 feet per minute, gives access to the top of the stoves and furnace. It is located adjacent to one of the stoves and is 100 feet high. The elevator is shown in Fig. 8. The stoves were built with

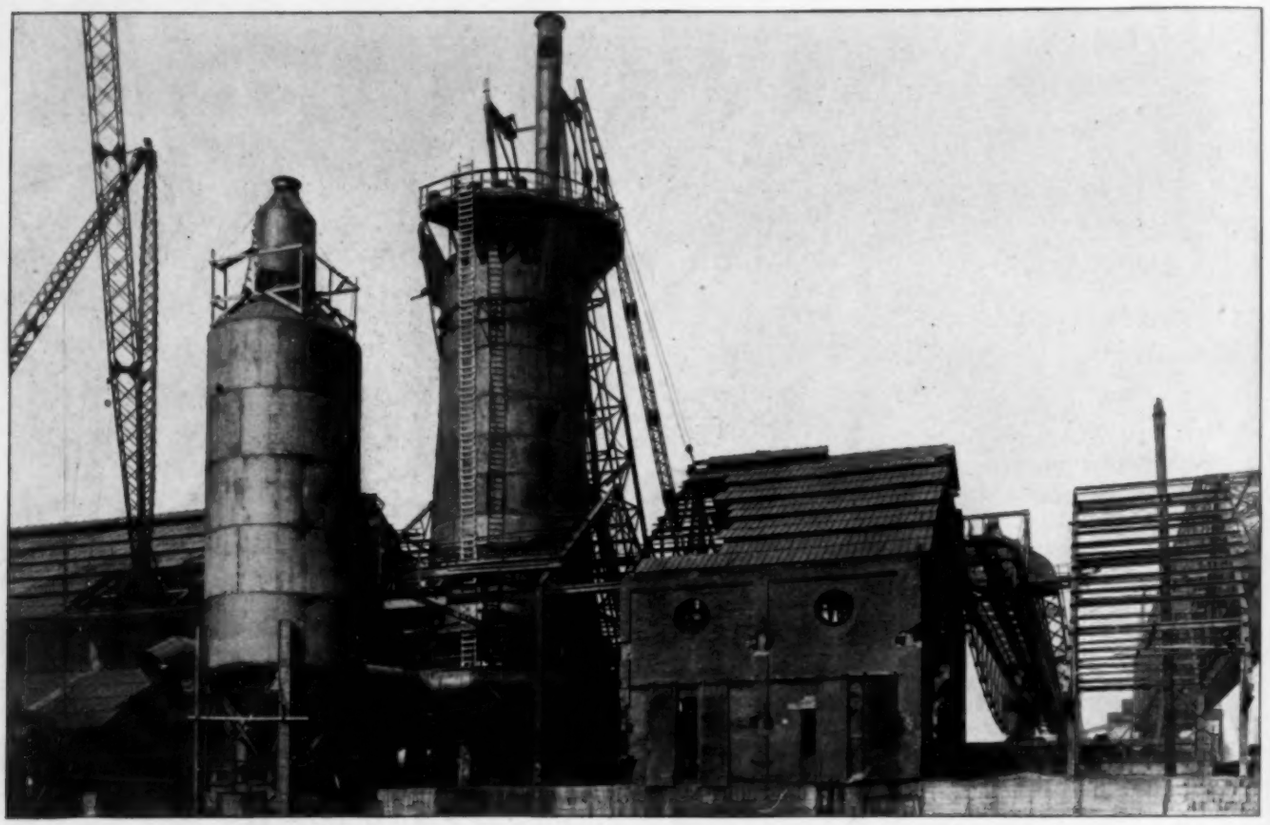


FIG. 2—ANCHORING SKIP BRIDGE TO THE TOP OF THE FURNACE. CAST HOUSE LEFT INTACT AS FAR AS POSSIBLE

285,000 square feet of heating surface, 3½-inch checker openings and 2-inch checker walls. Washed gas is burned by means of specially designed gas burner shown in Fig. 10.

The checker and arch construction follows the Brassert-Jones patent. This construction forces the equalization of the flow of descending gas and ascending air through the checker openings. It has proved effective in overcoming the tendency of gas and air to channel and to give hot and cold segments in the checker work. The ability of a stove of this type to carry high heats from 1300 to 1400 degrees Fahr. on wind volumes in excess of 40,000 cubic feet per minute, and to maintain stack temperatures not in excess of 400 degrees Fahr. over periods of a con-

tinuous furnace blast, has already been demonstrated. Putting the furnace on a 3-stove basis, accomplishes a notable saving in stove equipment, including shell, lining, valves, and other castings and accessories, decreases radiation and leakage loss, and saves operating labor. The stoves are insulated between the brick lining and stove shell. They are fitted with 30-inch Mathesius hot blast gate valves. This type of valve was described in the Aug. 23, 1917, issue of THE IRON TRADE REVIEW.

The valves were originally developed at the South Works of the Illinois Steel Co., where many have now been in service for over three years without replacement. As contrasted with the mushroom type, they eliminate the usual double right angle turn of blast travel with the attendant difficult brickwork. Wind leakage is negligible on account of the faces of the seats and valves being tapered and in alignment. This also eliminates cutting and cracking of the faces of the gates and seats. Each valve is equipped with two stems which are interlocked by an external yoke. There is no water leakage between the stems and valves since the latter do not drop on the seats nor do the valve gates bind on the stems. With the stove on blast, the gate of the valve is completely drawn from the path of the blast. This preserves the face of the gate. The withdrawal of the gate from the path of blast effects a saving in heat, tests having shown an increase in temperature of cooling water that is negligible as compared to the marked increase of temperature of cooling water through the mushroom-type valve. Before the valve is installed, it can be inspected for closure and alignment, and there is always assurance of a long life of equipment with freedom from wind and water leaks.

The existing chimney flues had to be interconnected and a 20-foot tunnel cut through the concrete foundations of No. 4 furnace stoves to connect with the flues of the new stoves. This work, including the interconnection of the boiler flues to equalize drafts in the two existing stacks, was made with both Nos. 3 and 4 furnaces in blast.

Overhead Cold-Blast Mains

The original plant had been designed for only two blast furnaces. The cold-blast mains were located underground and arranged in such a way that it was impossible to connect the cold-blast main of the new furnace with the existing turbo-blowers. In order to connect the turbo-blower with all three blast furnaces, it was decided to change the cold-blast main system entirely, all mains being placed overhead and connected accordingly. This difficult work was performed during one of the severest winters known in Chicago and without interfering with the operation of the existing blast furnaces.

The iron and steel for the new furnace, stoves, gas washer, hot-blast and cold-blast main system, was fabricated and erected by John Mohr & Sons, Chicago.

In order to stock ore for the new furnace a 350-foot extension of the present ore dock and ore storage yard was necessary. As the present type of dock construction had proved entirely satisfactory the same type was adopted for the extension. This work was done by the Great Lakes Dredge & Dock Co., Chicago. A combined ore-unloading and ore-handling bridge with a span of 300 feet was furnished by the Mead-Morrison Mfg. Co., East Boston, Mass. It is equipped with an automatic grab bucket which has a capacity of 11 tons. The ore is delivered to the plant by boats unloaded by the bridges and buckets and is discharged into deflecting hoppers which are built in the framework of the dock shear-leg towers. It is then either transferred into railroad cars, or delivered directly to transfer cars which traverse the ore bins.

The new ore, coke, and limestone bins are of the Baker suspension type and are built of reinforced concrete and steel. The bin system occupies a space of 169 feet and consists of nine ore, five limestone and one scrap bin all of

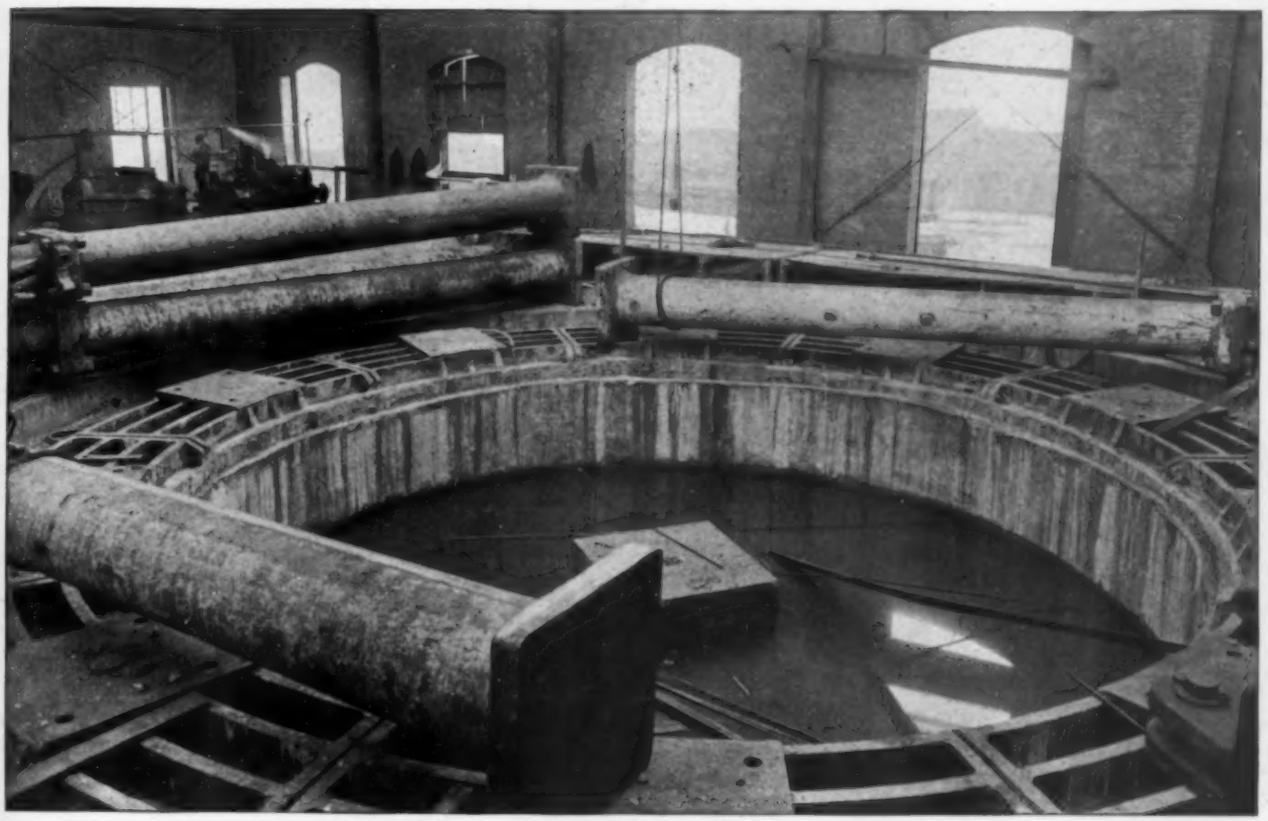


FIG. 3—CAST-IRON SUB-BASE IN 10 SECTIONS IS MOUNTED ON TOP OF OUTER HEARTH WALL. COLUMNS READY TO BE BOLTED TO PLATES

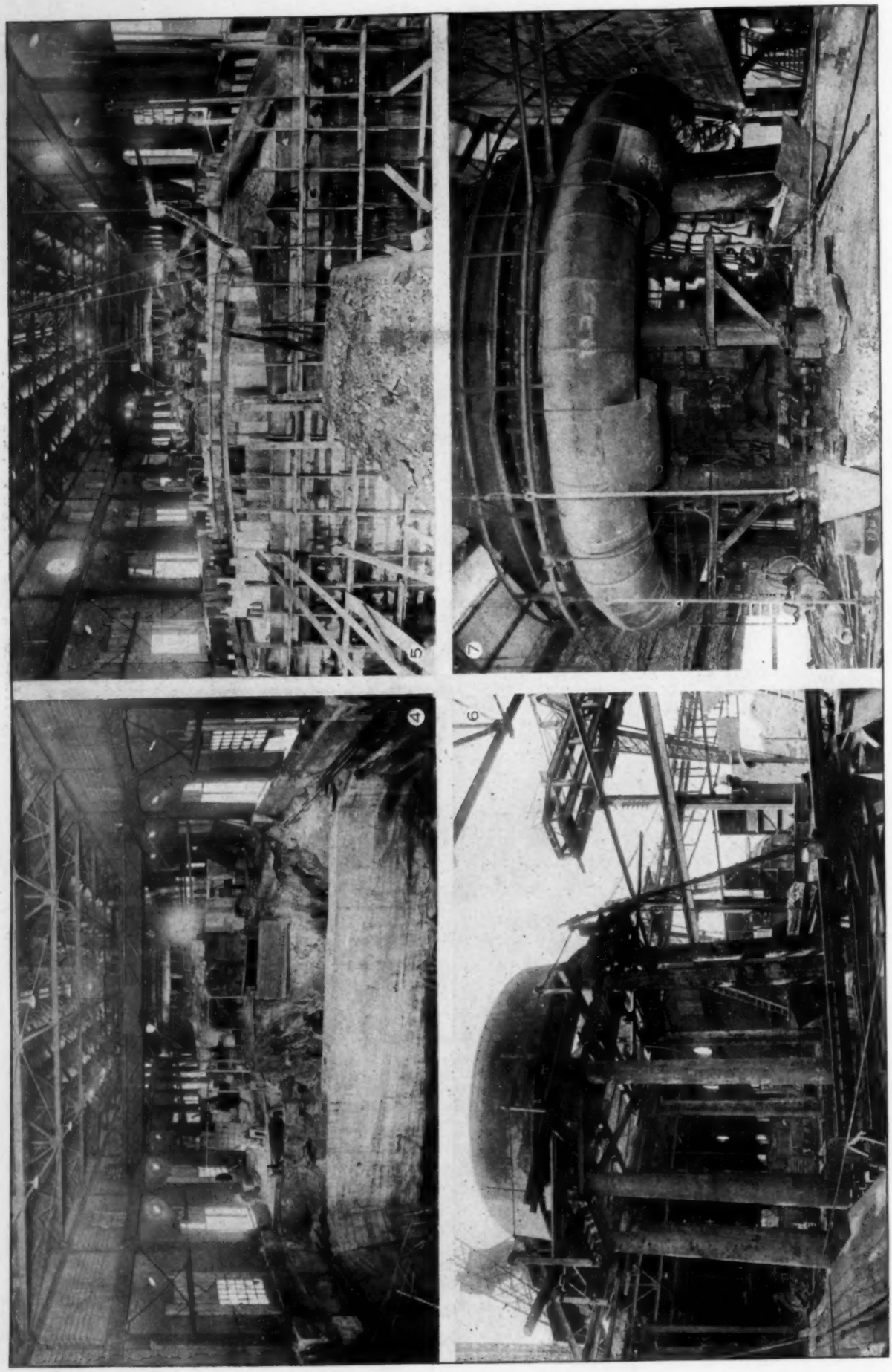


FIG. 4—PROGRESS OF CONSTRUCTION MARCH 21, 1917. FIG. 5—HEARTH FOUNDATION 83 DAYS LATER. FIG. 6—FIRST SHEET OF THE SHELL INSTALLED 169 DAYS AFTER CONSTRUCTION WAS BEGUN. FIG. 7—FURNACE IN BLAST 369 DAYS AFTER GROUND WAS BROKEN

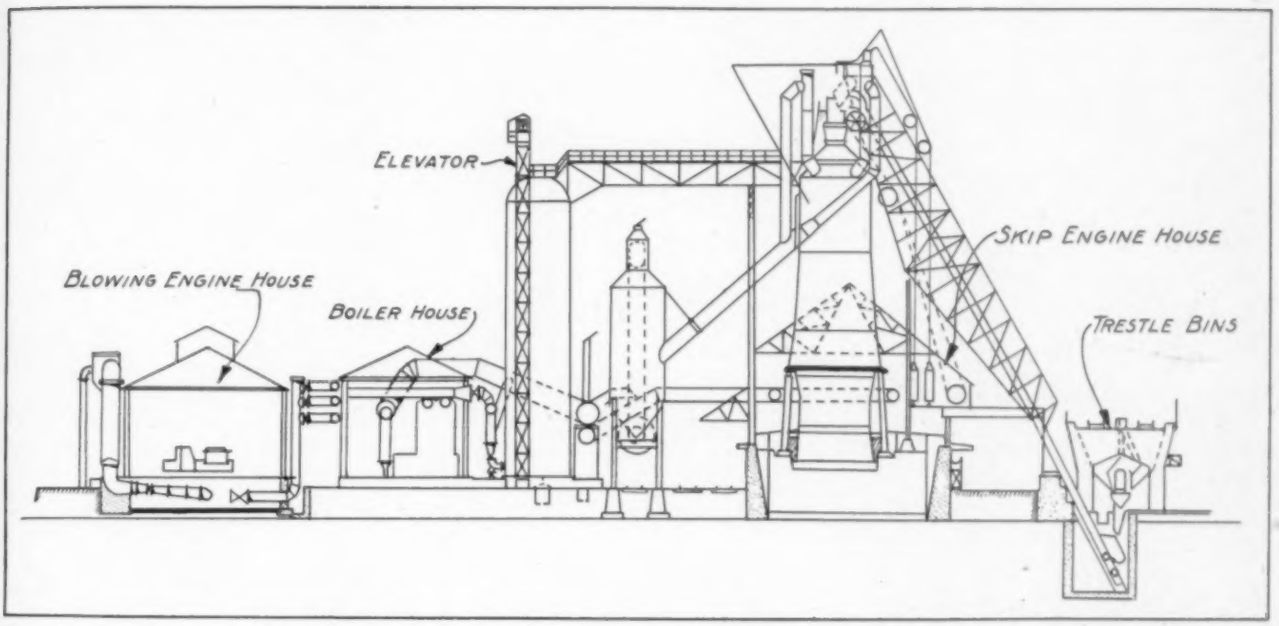


FIG. 8—SECTIONAL PLAN OF THE 600-TON FURNACE OF THE IROQUOIS IRON CO. THE ELEVATOR IS BUILT ADJACENT TO NO. 3 STOVE

which discharge into scale cars. One double coke bin discharges directly into the skip cars. The bins were designed by Arthur G. McKee & Co., Cleveland. Before they could be installed, the existing high-line had to be removed and relocated without interrupting the operation of the other furnaces. This was an intricate job, as the high-line consisted of three separate trestles which necessitated the relocation of the entire high-line of 600 feet in length, in order to keep it in relative position. To avoid interference with the operation of the transfer car, while the skip tank was being installed, only one track of the double-track structure was removed at one time. The skip pit required an excavation of 40 feet below the yard level with a head of water of 35 feet. After installing the skip tank the other track was removed and the bins were erected. The filling of furnaces Nos. 3 and 4 was not effected by this work.

The skip bridge is of the cantilever type inclined 60 degrees from the horizontal. It is supported entirely independent of the blast furnace, so as to keep its load off the furnace. The skip bridge which was furnished by the Worden-Allen Co., Chicago, is shown in Fig. 11. It is 171 feet long and supports a double track upon which two heavy skip cars operate. The latter are of the trailer truck type. The weight of a skip load is eight tons of ore, and each car holds 110 cubic feet of coke.

The skips are operated by a double-drum skip engine built by the Lidgerwood Mfg. Co., New York. The drum is driven through reduction gears by a 200-horsepower Westinghouse motor. Auxiliary equipment for controlling the operation of the skips was supplied by the Cutler-Hammer Mfg. Co., Milwaukee. The hoist engine is in a concrete and brick structure directly under the skip truss, and above the iron-ladle tracks. This structure also houses the bell cylinders for raising and lowering the bells. The latter are operated by air from the cold-blast main. The skip cars and bells are operated from the scale car.

The steel and tile roof of the cast-house was remodeled to fit the skip incline and furnace. An extension to

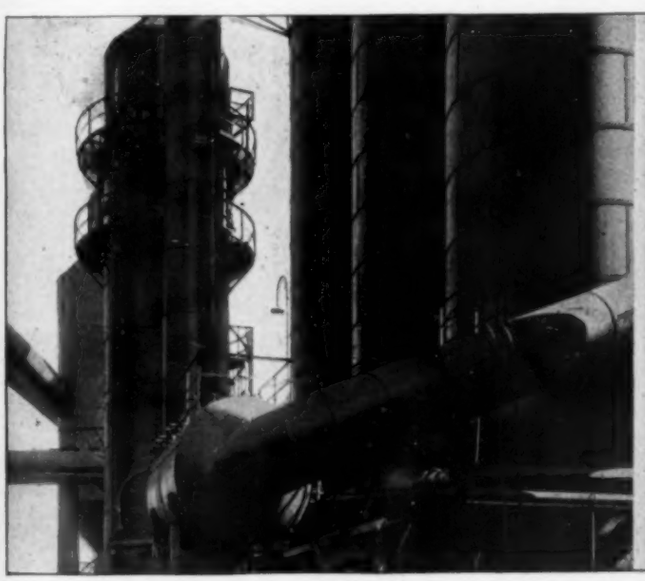


FIG. 9—GAS WASHER AND SOW DRIER. GOGGLE VALVE IN GAS MAIN

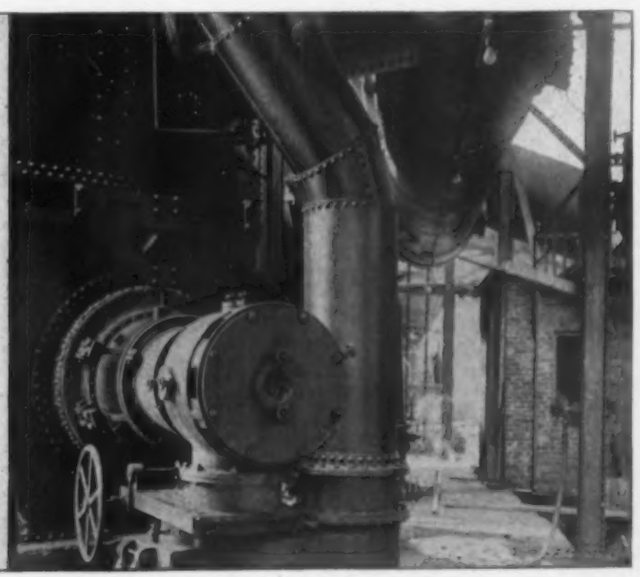


FIG. 10—GAS BURNER AT STOVE. BUTTERFLY VALVE IN LEG-PIPE

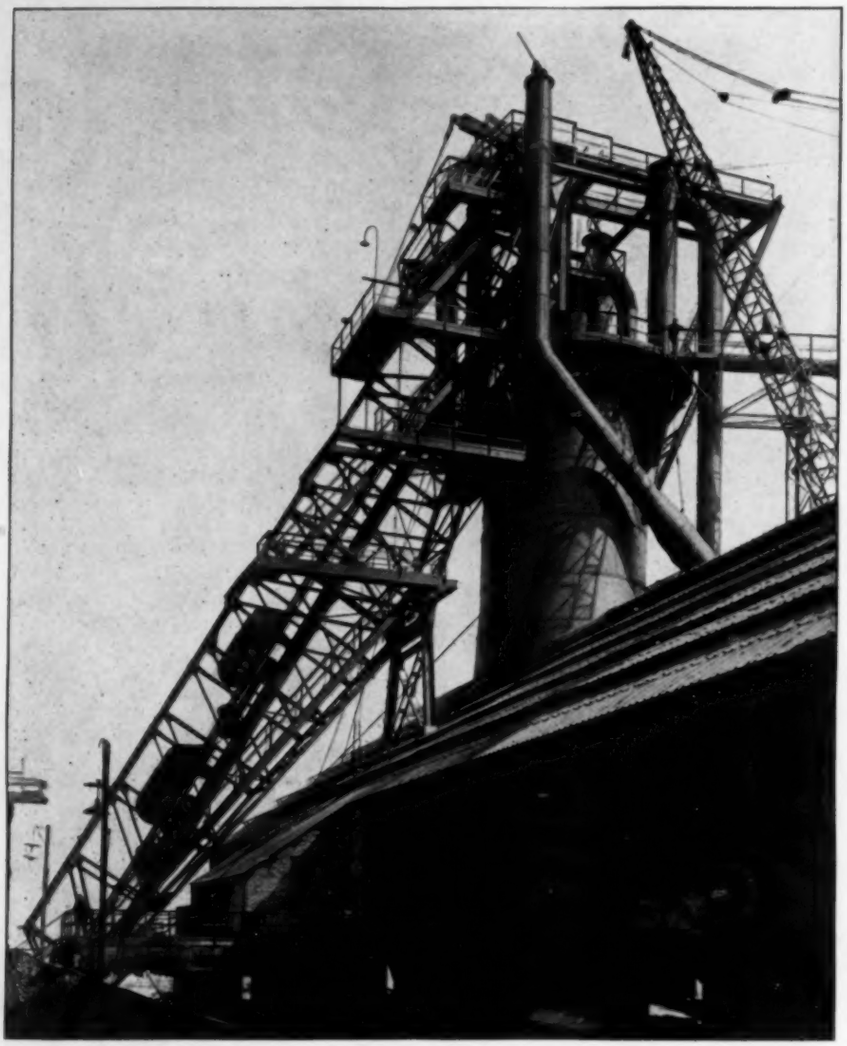


FIG. 11—TOP RIGGING AND SELF-SUPPORTING CANTILEVER SKIP BRIDGE. NOTE PLATFORMS NEAR SHEAVES

this cast-house was made to provide a modern lavatory and locker room for the comfort of the blast furnacemen. The blacksmith shop was moved 300 feet and placed on new foundations.

The cold blast is supplied by a turbo-blower which delivers 45,000 cubic feet of air per minute. The blower was built by the Ingersoll-Rand Co., New York. For additional steam requirements two 550-horsepower Rust boilers with superheaters were installed. To do this it was necessary to extend the boiler house 40 feet. The boilers are equipped with Birkholz-Terbeck premixing gas burners. No addition to the power house was required, there being room for the installation of the new turbo-blower and of a 600 kilowatt turbo-generator. The latter was furnished by the DeLaval Steam Turbine Co., Trenton, N. J.

Condensing equipment for the turbo-generator and turbo-blower of ample size to take care of an additional blowing engine was furnished by the Alberger Pump & Condenser Co., New York. Additional pumping capacity is being furnished by a 20,000,000-gallon DeLaval centrifugal pump. A second double-strand Heyl & Patterson pig-casting machine was installed, together with a ladle-tilting device. The necessary pipe work for water, steam, air and oil lines as well as the remodeling of the existing piping occasioned by the construction of the new blast furnace, was erected by the Pittsburgh Piping & Equipment Co., Pittsburgh.

The excellent showing made in the construction of this blast furnace which involved placing 60 subcontracts, is due to the co-operation of the owners, engineers and contractors. The best efforts of all concerned were concentrated on the fulfillment of the task which they had set out to do.

Germans New Society Aimed at Warfare

According to a translation by Sir Robert Hadfield of England, the Kaiser has approved the foundation of a trust which will be known as "Kaiser Wilhelm Trust for Promotion of War Science". The aim of the trust is to further the development of scientific and technical aids to warfare, by uniting the scientific and the military forces of the country for work together. The scientific military work is to be carried on by the committee for the chemical raw materials, for the production of munitions-manufacturing materials; committee for chemical war materials (powder, explosives, gas, etc.); committee for physics, including ballistics, telephony, telegraphy, determination of targets and distances, measurements, etc.; committee for engineering and communication; committee for aeronautics; committee for obtaining and preparing metals.

Employs Unique Carrier for Pig Iron

The Niles stack of the Carnegie Steel Co., Niles, O., was blown in May 6 after being banked since Sept. 29, 1917, on account of the coke shortage. It was placed in operation Oct. 10, but after a run of two days was forced to suspend. Later the blast was put on long enough to get a cast of iron. Streams of water were turned in the top of the furnace and allowed to quench the stock. The superintendent states that the cold stock was raked out to the level of the iron notch. Picks were used to loosen the cinder which was extrely soft to a depth of 2 feet below the tapping hole. No salamander was encountered to this depth. During the shutdown, a Tod blowing engine was installed and all blowing engine valves replaced with the Mesta type. An electric generator which will be held for emergency purposes was also added to the electrical equipment. A unique method is used at this furnace for transferring the pigs into the railroad cars, the equipment used for this purpose having also been installed recently. Bolted to the roof cross girders and equally spaced are four monorails, one end of each extending over railroad cars at the far end of the cast house. Each monorail is equipped with an electric hoist block, the hoisting hook of which is fitted with a scoop-shaped container. After the iron is cast the sows and pigs are broken and loaded into the container. The latter is then elevated, moved to the rear of the cast house until it is positioned over the railroad cars, and automatically dumped. By means of this equipment the pig beds are cleared more quickly while the pigs are only handled once.

Using Pulverized Coal Efficiently

Practical Methods of Crushing, Drying and Delivering the Fuel to the Furnace Together With Important Details Essential for Proper Combustion Are Discussed—Four Types of Burners Are Compared

BY H. R. COLLINS

THE purpose of pulverizing coal before burning it is to make available every heat unit it contains. Machinery has been developed which will pulverize coal in one operation, delivering it to bins in front of the furnaces at an expenditure of about 17-horsepower-hour, per ton, in a medium-sized plant. The cost of the operation depends upon the amount of moisture that must be expelled before pulverizing, the cost of labor, and the cost of coal delivered at the plant. At a small plant, requiring a pulverizer with a capacity of only ½ ton per hour, the cost per ton pulverized will naturally be greater than at a plant requiring the largest pulverizer, with a capacity of 7 tons per hour.

The first step is to reduce large lumps to a size suitable for drying uniformly, before passing to the pulverizing mills; this is done in rolls, at a single pass. The second step is the elimination of moisture, in order to facilitate pulverizing to great fineness, while also increasing the heating effect and the temperature attainable when the coal is burned.

Driers are now manufactured which are able to eliminate moisture without distilling any of the volatile combustible matter in the coal; they are fired by hand or with pulverized fuel. The heat first surrounds the shell of the drier, being confined within a chamber where complete combustion takes place; the heated gases are then led through a duct to the discharge end of the drier and enter the inside of the shell at a temperature not exceeding 300 degrees Fahr. This temperature is maintained by the operator and is indicated by a pyrometer. Volatile combustible matter is not likely to be distilled until the temperature rises above 400 degrees Fahr.

Protecting the Pulverizer

On discharging from the drier, the coal is usually passed over a magnetic separator in order to prevent pieces of iron from going to the pulverizer. Two types are used—a magnetic pulley, which automatically discharges its collection of iron, and a lifting type, from which the iron is removed by hand when convenient. In the operation of pulverizing, the coal should preferably be reduced until 95 per cent will pass through a 100-mesh and 70 per cent through a 300-mesh sieve. Such a product is obviously an almost impalpable powder. After pulverizing, the fuel is conveyed by one of several methods to the point where it is to be used. In several installations the pulverized coal is conveyed a distance of over 900 feet. Where possible, a bin should always be installed at the furnace, in order to guard against interruption of supply.

Regulating the Supply

Feeders are practically indispensable for regulating the passage of the fuel from the bin to the burner. They are now made quite simple and highly efficient. They deliver the pulverized coal in definite quantities into an air current of fixed volume, where the air disseminates the pulverized fuel, surrounding every particle and putting it into condition to develop all its energy. The first to ignite are the volatile gases; these raise the temperature to the ignition point of the solid carbon, and before leaving the zone of heated air every particle has released its last heat unit. It is entirely possible to obtain temperatures ranging between 1900 and 3500 degrees Fahr.; the latter temperature was observed in an open hearth, when the average temperature of the furnace itself at some time ranged from 3100 to 3200 degrees Fahr.

To justify the expense of erecting a special building, and installing special machinery to pulverize coal, the following advantages in its use may be enumerated:

1.—Conservation of the country's fuel, by utilizing every heat unit in the coal, made possible by this method of consumption.

2.—Reduction of labor for handling coal to the point of consumption, handling by the fireman, and the removal of ash and unconsumed fuel from the ashpits; practically all of this expense is avoided when fuel is burned in pulverized form. All the coal is received at one point, and thereafter it is handled entirely by automatic machinery, the human element being eliminated, except for supervision, adjustment and repairs.

3.—From actual experience with many grades of coal it has been found that nearly every carbonaceous fuel in solid form, from lignites to the graphitic anthracites of Rhode Island, will yield its maximum measure of heat, if burned in a truly pulverized condition.

4.—Coal in pulverized form can be injected into a furnace on a column of air, at low velocity, thus allowing the expanding gases to liberate their heat without erosion of the refractories.

5.—Pulverized fuel permits the maintenance of a constant temperature in a furnace, when the relative amounts of fuel and air have once been set, and the body of the furnace has been brought up to the desired temperature. It will continue thereafter under what is known as a test condition. Furnaces can be operated in this manner hour after hour, as shown by charts of recording pyrometers. The correct relationship between the amount of pulverized fuel and the volume of air, for any desired temperature, can be controlled automatically, after adjustment to the particular grade of coal in use, thus using a minimum of excess air. Gas analyses have been obtained as high as 17 per cent of CO_2.

Coals of about 35 per cent volatile, 50 per cent fixed carbon, 8 per cent or less ash, and 2 per cent or less sulphur, are preferable for kilns, boilers or metallurgical furnaces. Coals analyzing 25 per cent ash, and 5 per cent sulphur, have caused no trouble in kilns, boilers or metallurgical furnaces. Experience shows that sulphur is entirely consumed by burning in suspension, none of it being absorbed by the metal or other liquid bath, as does occur in the usual reverberatory furnaces used for melting electrolytic copper. Storage bins for pulverized coal should be dust-tight and have steep hoppers. This enables old coal to leave the bin completely; accumulations of old coal are liable to fire, smolder, coke and cause more or less annoyance.

Advantages of Pulveried Coal

Coal should be pulverized: (*a*) To give the finest product with the least power consumption. (*b*) To permit high temperatures with the least consumption of fuel. Drying of the coal also promotes uniformity of temperature. (*c*)

Abstract of paper to be presented at the September, 1918, meeting of the American Institute of Mining Engineers. The author is mechanical engineer for the Fuller Engineering Co., Allentown, Pa.

Dried coal will flow more easily from bins and through the feeders and burners. Coal should be dried to 1 per cent of moisture, or less, when possible, except that lignites can be readily handled with 5 to 8 per cent combined moisture. The finer the coal the more rapid its combustion, with relatively higher efficiency. It is commercially and economically possible to grind coal so that at least 95 per cent will pass a 100-mesh sieve and 70 per cent will pass a 300-mesh sieve.

The cost of preparing pulverized coal depends largely on the price, and on the moisture content of the coal to be used. On the basis of 200 tons per day, of coal containing 7.5 per cent moisture, at present rates of wages and supplies, and with coal ranging in price from $1 to $8 per ton, the cost of pulverizing will be between 30 and 40 cents per ton, not including overhead charges, interest, or depreciation.

Avoiding Explosions

A mixture of coal-dust particles in air will not ignite until it reaches a certain density; on the other hand, a mixture that is too rich in coal dust has a tendency to smother flame. Dust clouds should naturally be avoided outside the furnace chambers, and all sparks or flames should be kept away. Pulverized coal should be conveyed from mills to bins in as compact condition as possible; air currents should not be used to convey pulverized coal if any other method can be devised. Leakages should be stopped, to prevent uncleanliness and accumulations in accessible places. Carelessness in the handling of pulverized coal, and poorly designed plants, are the only causes of so-called explosions.

A good feeder must absolutely control the flow of pulverized coal to the burner, and prevent any rush or flooding of the fuel. This is essential for positive control of predetermined temperatures. A good mixing projector, of burner, should be so designed that it will receive the pulverized coal in regulated quantities, break up the stream of fuel, and so distribute it that each particle is surrounded by the correct proportion of air. It must also project the fuel into the furnace at the velocity required by the operation, and must be so proportioned as to deliver the necessary volume of air at the proper velocity.

Types of Burners

Four types of burners are employed, as follows:

1.—Induction type, in which a high-velocity jet induces and entrains the necessary additional air, and projects it into the furnace at low velocity; this type has the high-velocity air under control as well as the induced air.

2.—Positive type, in which the high-velocity air induces and entrains the fuel and projects it into a positive, larger column of low-velocity air. This breaks up the fuel stream evenly, and disseminating it through the larger column of low-velocity air, before it enters the furnace. The larger column of low-velocity air is usually preheated in stoves located in a chamber through which the waste gases from the furnace pass; temperatures of preheating range from 100 to 600 degrees Fahr. in the better designed system of stoves. Both columns of air are positive, being generated by fans or pressure blowers, while gates regulate the quantity.

3.—Single type, in which the high-velocity air first induces and entrains the fuel stream, after which a high-pressure jet of air, applied usually in the center of the stream, gives a sharp projection of flame and quick distribution of the fuel through a larger volume of preheated air at quite low velocity. This type of burner is usually adjustable in direction. The heated air ranges in temperature from 2200 to 1300 degrees Fahr., as in open-hearth practice; usually 10 to 15 per cent of the air enters with the fuel, and 85 to 90 per cent from regenerators. The stack draft through the regenerative chambers is regulated by a valve.

4.—Single type, in which the high-velocity air induces and entrains the fuel and projects it into the furnace, as in rotary-kiln practice, under usually 5 to 6-ounce pressure from a fan. The additional air required for combustion is induced by stack draft, and enters around the hood and through kiln discharge opening.

Air Pressure and Stack Draft

Air pressures of ⅜ ounce entering the combustion chambers of some types of furnaces, from air and fuel mixing burners, up to 2 pounds in pressure jets of other types, have been in successful, constant use for years. Stack draft should be of only sufficient intensity to create a partial vacuum in the furnace, thereby helping the fuel and air into and not out of the chamber; its strength must be enough, however, to extract all the products of combustion.

Fuels low in volatiles but high in fixed carbon, as anthracite and coke breeze, require a special furnace, in which the incoming fuel and air pass through the flame and the products of combustion, in a water-cooled, arched firebrick chamber, on their way to the furnace or boiler. When the volatile constituents of the fuel range from 1 to 3.5 per cent, it is difficult to support combustion unless a temperature above 900 to 1000 degrees Fahr., the flash-point of carbon, is maintained. The water-cooled arch, rear wall, and side walls are made of a special form of firebrick, which slips in place over the water tubes. After circulating through the tubes, the water passes to the hotwell or heater at approximately 190 degrees Fahr., entailing no appreciable loss of heat.

Lignites and bituminous coal require no special furnace. As the volatiles ignite between 600 and 700 degrees Fahr., from the radiant heat of the walls, the flame is self-supporting, and every heat unit in the fuel is liberated before coming into contact with any cold surface. Anthracite, coke breeze and lignite ash do not slag. Bituminous coal ash will slag on the bottom of the furnace chamber, if not blanketed with cooler air, properly admitted, and if allowed to remain too long in the furnace. Most of the ash from pulverized coal passes away through the breeching to the cyclone, where the ash is separated from the gases. That portion which settles to the floor of the furnace should be removed from time to time; the quantity is very small and it is quite light.

Degrees of Heat Maintained

Temperatures between 1800 and 3500 degrees Fahr. can be maintained in the flame. Slag forms more readily at high temperatures, necessitating proper blanketing with cooler air, always remembering the advisability of obtaining the maximum percentage of CO_2. We frequently obtain 16.5 to 17 per cent CO_2 under operating conditions.

Experience seems to point to the necessity for vertical baffle walls where the waste gases enter the regenerative chambers. Turning the direction of the gases up and down several times tends to discharge the dust tangentially, allowing the major portion to settle in the bottom of the passages, whence it is easily removed, through proper cleaning doors at the sides, not interfering with the operation of the furnace. The gases then filter through checkerwork properly spaced and installed. The narrow side of the brick tile should be laid vertical and on rider walls, to permit the use of longitudinal scrapers to remove the ash which may have passed by the vertical baffle walls. This arrangement will undoubtedly give the regenerating chambers a life equal to the best record ever attained, as the narrow edge of a vertical tile presents little surface for the flocculent ash to rest and close the gas passages.

Powdered Coal is Unharmful

The life of furnaces in which pulverized fuel is used is equal to that of hand-fired, stoker, oil, or gas-fired furnaces. By absolute control of the quantity of coal and air, the velocity of the expanded gases can be re-

duced until erosion of refractories becomes hardly discernible. All the benefits of pulverized coal should be taken into account: Labor saving, increased fuel efficiency, ability for closer adjustment, absence of smoke, etc.

The efficiency of hand firing depends upon the skill and reliability of the fireman. With the best of attention, a loss of 20 per cent heating value is frequent, and it often reaches as high as 40 per cent, taking into consideration the analysis of the ash and of the flue gas. Stoker firing is relatively more efficient and more regular than hand firing, but the feeding of moist coal wastes part of the heat in the most undesirable place. Losses also occur in breaking and removing the clinker, in the discharge of unburned fuel, and in the flue gas.

Coal properly pulverized and burned is on the same basis, as far as thermal capacity is concerned, as oil or natural gas; and the price of the coal prepared and delivered into the furnace is directly comparable, on the heat unit basis, with the cost of fuel oil or gas delivered into the furnace, plus the slight additional cost for ash removal. Savings by the adoption of pulverized fuel in the operation of various types of furnaces have been attained as follows: Heating and busheling furnaces, 20 to 25 per cent; puddling furnaces, 30 to 50 per cent; open-hearth furnaces, compared with gas producers, 30 to 40 per cent; copper reverberatory, smelting ore, 30 to 45 per cent.

In other furnaces, the consumption has been reduced to the following figures: Continuous billet heating, 160 pounds of coal per ton of billets; desulphurizing iron ore in rotary kilns, 296 pounds of coal per ton of ore; drying and nodulizing iron ore in rotary kilns, on basis of 30 per cent free moisture and 11 per cent combined moisture, 477 pounds of coal per gross ton of ore. The foregoing figures are from actual operations over extended periods, and confirm our contention that coal burned in true pulverized form is the only method by which every heat unit in the fuel will develop its full value.

Turns Ore to Wrought Iron

A PROCESS has been perfected and patented by Herbert Lang, chemical engineer, 1012 Hearst building, San Francisco, for manufacturing wrought iron using petroleum as fuel. The process has been placed at the disposal of the government through the bureau of mines. Mr. Lang claims that by means of his process wrought iron can be produced much cheaper than the prevailing market price. The process is best adapted to California ores which are practically limitless in quantity.

The features claimed for Mr. Lang's process are as follows:

1.—Forming a solid mass prior to introduction into the furnace.
2.—Keeping the mass intact during the whole process.
3.—Forming a slag which will assist in holding the mass together, exclude air, and extract to some extent, sulphur and phosphorous.
4.—Compressing the mass in an atmosphere of reducing, or at least neutral gases.
5.—Carrying on the process continuously.
6.—Using a furnace capable of administering a gradually increasing heat.

In discussing his process, Lang says the ore is ground so that it passes through a 16 mesh sieve. It is then mixed with a heavy oil, preferably asphaltum. The mixture is formed into a cylinder of such a size that the reduced iron in each one will weigh about 150 pounds, a convenient size for subsequent rolling. The cylinders are then placed in a furnace and heated gradually to the welding point of the iron, when they are taken out and compressed to form blooms of convenient shapes for the mill.

To preserve the mass, small portions of fusible silicate rock are added thus forming sufficient slag to hold the semi-fused mixture together. Lang's experimentation with phosphoric and sulphuric ores in this direction enable him to produce a comparatively pure iron, he maintains.

Open-hearth steel makers have offered Lang $40 a ton for his product, he says, which they propose to use in connection with pig iron. After working out his process laboratorily, he built a furnace large enough to turn out from one to two tons of iron a day. This furnace is said to embrace automatic features and to be continuous in its action.

A reducing atmosphere is kept within the furnace at all times so as to avoid the reoxidation of the iron which occurs whenever free oxygen is allowed to strike it. To avoid this the bloom is compressed before taking it entirely out of the furnace. This reoxidation is the rock upon which previous attempted processes in this line have foundered. No provision was made for the compression of the metal. Instead, it was uniformly sought to make only the powdered form of iron, which was to have been dealt with in another operation and usually in another furnace, to bring the material into a compact body. The hot powder absorbed oxygen with great avidity and, of course, became unweldable at once.

In previous attempts to make direct iron in reverberatory furnaces, it was necessary to rabble the charge upon the hearth in order to work the metal into balls. Mr. Lang avoids this by forming the ball before placing it in the furnace. The mass is thoroughly heated through and reduced in approximately four or five hours. Mr. Lang states that he has made iron of varying degrees of hardness from soft wrought iron to hard steel containing 2 per cent of carbon by his process.

Aero-Engine Development in Great Britain

At the annual meeting of the D. Napier & Son, Ltd., London, England, manufacturers of automobile and airplane engines, H. I. Vane, general manager, said they had far exceeded any previous year's output and that better results could be expected when the buildings now under construction were completed. The Napier company last year perfected an airplane engine of high power and light weight. Mr. Vane is of the opinion that government and civilian requirements for these engines will be large because airplane postal, light freight, and passenger routes will be established in the near future. The future of the motor industry, says Mr. Vane, should be a bright one, especially in view of the way in which motor transport has proved its worth. There is great need, however, for proper and adequate government protection for the trade, especially in the first few years after peace is declared. Sales organizations and factories will have to be rebuilt on a peace footing which is distinct from a war footing. In England the government is expected to aid the industry in this direction, especially after the patriotic way in which the whole industry adapted itself to government requirements and loyally supported them during this war.

At the April 11 meeting of the Birmingham Metallurgical society, Birmingham, Eng., a committee was appointed which eventually will form a trade research association. This association will collect data, trade secrets, etc., on the various alloys in which the metal trades are interested. The information will be pooled and placed at the disposal of all the members of the society.

Westinghouse Marine Engine Plant

The Westinghouse Electric & Mfg. Co. Has Built a Modern Plant for the Manufacture of Steam Turbines and Reduction Gears—Contracts With Government Necessitated Expansion

IT is officially announced that the Westinghouse plant at South Philadelphia for the manufacture of marine-power machinery is complete and it is understood that orders for apparatus representing 1,500,000 horsepower, equivalent to the equipment for about 300 steam vessels, will be filled before the end of next year.

Plant is Self-Contained

This new plant, which was conceived before our entrance into the war, is one of the largest of its kind in the country. It is completely self-contained and includes a foundry, pattern shop, forge shop, double-deck machine shop, erecting shop, etc. The machine shop is 750 x 125 feet. The foundry has a capacity of 2000 tons a month. The buildings have a combined floor space of 35 acres. About 5000 employes will be required for capacity operation.

The Westinghouse company acquired the Essington property toward the close of 1916. The storage house and pattern shop were completed by Aug. 15, 1917. By Nov. 15 the last building was completed and on that date the foundry went into commission.

The plant is located on a tract of land embracing 500 acres, with a frontage of 4500 feet along the Delaware river. The site is 9 miles south of Philadelphia and is reached by the Pennsylvania and Philadelphia & Reading railroads. The Delaware river also affords adequate means of transportation but as yet the company has built no docks.

The new plant is devoted exclusively to the manufacture of ship propulsion machinery principally for the Submarine Boat Corp. and the Merchant Shipbuilding Corp. as agents for the Emergency Fleet corporation, and also for the United States navy.

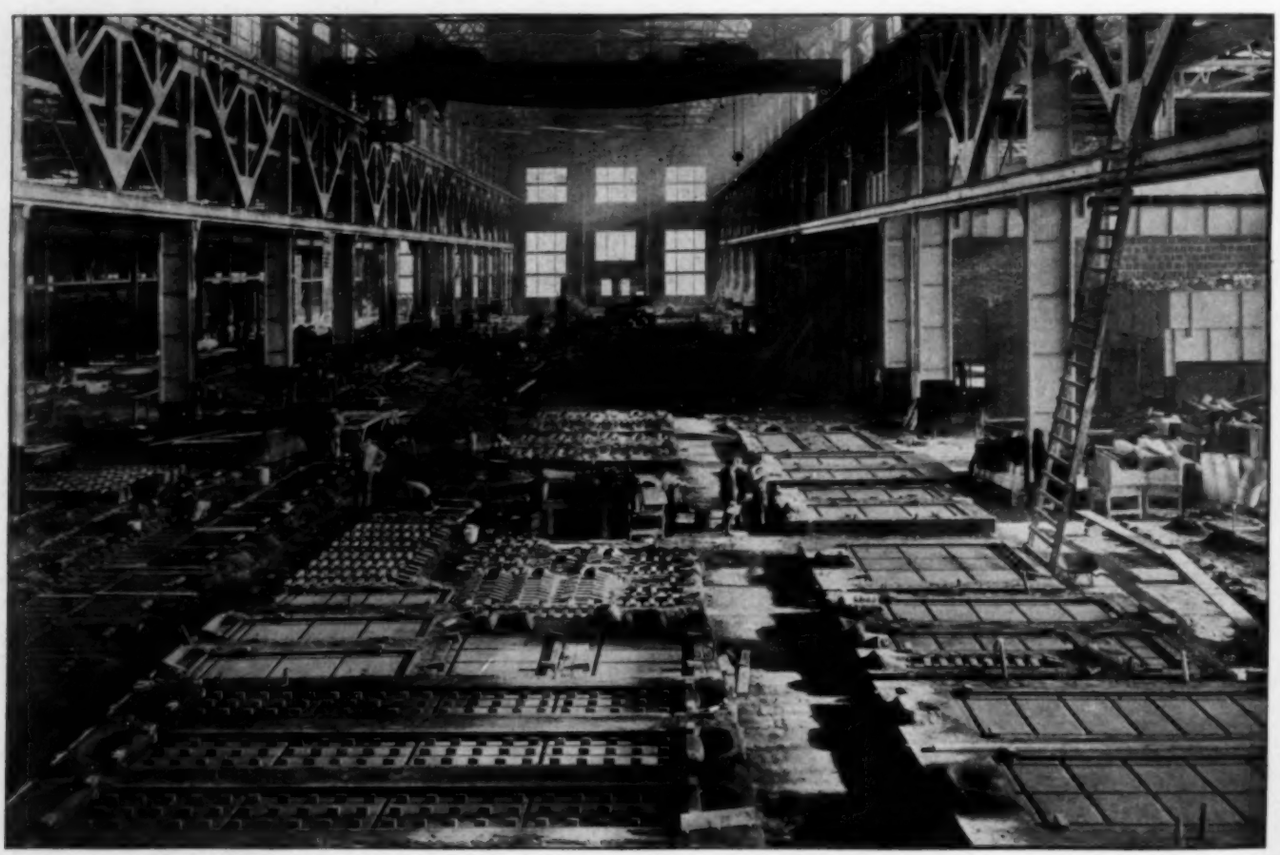
Buildings Are of Modern Construction

So far, there have been erected seven buildings. These, as previously mentioned, comprise the erecting shop, two machine shops, forge shop, pattern storage, foundry and power-house. Throughout the plant, the welfare and safety of employes has been given consideration and ample provision has been made for their benefit.

Expansion is Considered

In laying out the power and lighting systems, the engineers in charge of this work profited by the past experiences of other plants and designed a system which beside being able to supply present wants is capable of expansion should occasion require.

The company wished to use power from the Philadelphia Electric Co. and at the same time steam was necessary for the economical heating of the buildings during the winter months. After due consideration, a plan was perfected that promises to work efficiently for both the Westinghouse and the power companies. During the summer months no steam



INTERIOR OF FOUNDRY SHOWING GENERAL ARRANGEMENT AND TRAVELING CRANES

will be required at the plant except for testing purposes and on the other hand the power company during the winter months has an exceedingly heavy load. Under an agreement made between the two companies, the Westinghouse company is to operate its own power plant during the winter. As the plant is of the noncondensing type, the exhaust steam is to be utilized for heat. In the summer, when there is no call for steam heat, the Westinghouse company will use current from the Philadelphia Electric Co.

Underground Cables Used

Three-phase, 60-cycle current is delivered at 66,000 volts to an outdoor substation where it is stepped down to 6600 volts, the distribution pressure of the works, and sent to the powerhouse through lead covered cables which are located underground. The powerhouse at the present time contains three 3-phase, 6600-volt, 60-cycle, 1500 kilovolt-ampere steam turbines. A switchboard of two panels with the necessary measuring and switching devices controls the output of the power generating equipment. Six 625-horsepower boilers have been installed for supplying steam. They are equipped with automatic stokers.

Four substations have been installed for distributing the current to the various buildings. At these substations the 6600-volt current is stepped down to 440 volts for all constant-speed motor applications, such as elevators, machine tools and air compressors. Direct current at 250 volts is used for operating cranes, furnaces, blowers and other variable-speed installations. This current is obtained from converters of the rotary type which are installed at the substations.

In order to improve the power factor, the rotary converters are operated at 100 per cent power factor and the synchronous motors used for driving the air compressors in the substations are slightly oversize, the excess in capacity being used also as a corrective measure. From the substations the current is carried to the various buildings through underground cables to switchboards from which it is distributed to the motors.

The power and lighting systems are separate. The lighting system is supplied through its own transformers which are installed in each substation. Here the potential is reduced to 440 volts, which is the distribution pressure throughout the buildings. Transformers are installed on the outside of the buildings to reduce the 440-volt current to 110 volts which is the potential of the lamps.

A 7-foot canal has been dug from the Delaware river to the plant as a means of securing an adequate water supply for manufacturing purposes. At high tide, this canal has a surface of 45 feet. Mud and silt are removed from the water in a reinforced concrete settling basin. The canal ends in a concrete receptacle on the testing floor of the erecting shop, where a large amount of water is used in testing operations. This receptacle also is a distributing center for the other buildings. Fire protection is obtained from a reinforced intake flume and pumped to a tank from whence it flows by gravity. A plant has been installed for taking care of sewerage. The Imhoff system is used with lime as a precipitant.

Standard Construction Throughout

Heavy steel construction is used in all the buildings with the exception of the pattern storage. The walls are tile, the sash steel and the roofs, which are of the saw-tooth type, consist of concrete slabs covered with waterproofing material. The pattern storage is reinforced concrete. The construction is of the flat, mushroom type. The intermediate panels between the various concrete posts are made of tile.

H. T. Kerr, vice president of the Westinghouse company, directed the

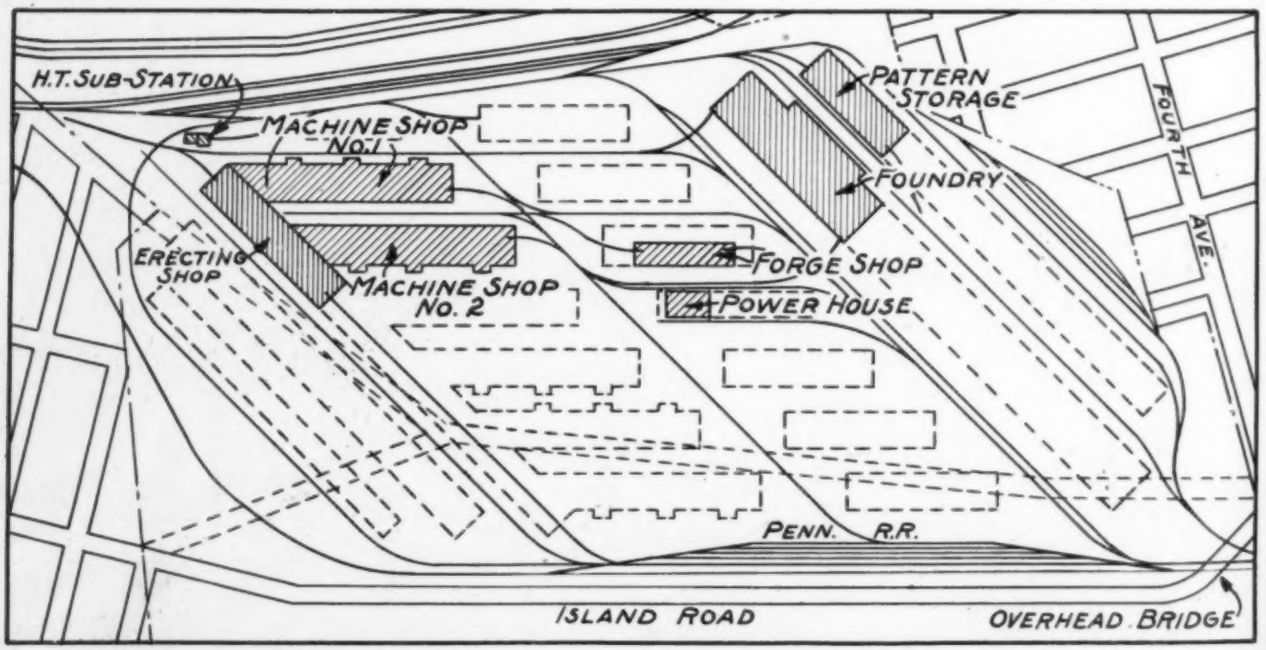
EXTERIOR OF FOUNDRY SHOWING THE GENERAL DESIGN AND AMPLE PROVISION FOR LIGHT

THE ERECTING SHOP IS ONE OF THE PLANT'S MOST IMPORTANT DEPARTMENTS

construction of the plant, while R. B. Hildon, assistant to the vice president, had direct charge of construction work. All of the various relations with the builders, Westinghouse, Church, Kerr & Co., were handled by Calvert Townley, assistant to President E. M. Herr, who had the final approval of all arrangements.

Will Make Shells

Certificate of incorporation has been filed in Buffalo for the J. J. Carrick, Inc., capitalized at $1,500,000, "to manufacture and deal in iron and steel and to deal in lumber and do a general mining business". The directors are Charles H. McCullough, vice president and general manager of the Lackawanna Steel Co.; Donald A. Mann, of Toronto, and Edward McMaster Mills, of Buffalo. It is understood that the new interest will take over the plant of the Militaire Motor Co., a defunct motorcycle factory in Kensington, and will manufacture 6-inch shells for the government. The shell contract is said to amount to $2,000,000.



SITE OF THE PLANT—TWO STEAM RAILROADS AND THE DELAWARE RIVER ARE CLOSE AT HAND

Correcting Heat Radiation Errors

Recent Temperature Measurements of Gases Show that the Hot Junction of the Thermocouple Has a Definite Relation to and Determines the Magnitude of the Radiation Error

BY HENRY KREISINGER AND J. F. BARKLEY

OF the errors entering into the determination of the average temperature of a stream of hot gases surrounded by colder or hotter surfaces, the radiation error is the most serious one and the most difficult to correct. Ordinary temperature measurements made with commercial devices under such conditions are from 5 to 25 per cent in error. If the surrounding surfaces are cooler than the gases, the temperatures indicated by the measuring instrument will be too low; or if the surrounding surfaces are hotter, as is the case in regenerating furnaces, the temperatures indicated will be too high. Radiation error may become of great significance under certain conditions of temperature measurements, and judgment must be used in interpreting the accuracy and the value of temperature readings.

The radiation error is due to the fact that, to a large extent, gases are permeable to radiation. When a temperature measuring instrument is immersed in a stream of hot gases surrounded by cooler surfaces, it absorbs heat from the gases by convection and its temperature rises. As soon as its temperature exceeds that of the surrounding surfaces, heat passes by radiation from the instrument to these surfaces through the intervening gases. Thus the instrument receives heat from the hot gases by convection, and gives off heat by radiation to the surrounding colder surfaces. The temperature of the instrument continues to rise with a decreasing rate until the quantity of heat it gives off is equal to the quantity of heat it receives; the temperature then remains constant. Under these equilibrium conditions the temperature of the instrument is between that of the stream of gases and that of the surrounding surfaces; in other words, it is lower than the temperature of the gases which it is intended to measure.

Nature of Radiation Error

When the instrument is inserted in a stream of gases surrounded by surfaces hotter than the gases, it receives heat by radiation from the hot surfaces and at first also by convection from the stream of gases, and its temperature rises. When the temperature of the instrument has risen above the temperature of the gases, the flow of heat from the gases to the instrument reverses, the instrument begins to give off heat by convection to the hot gases, and receives heat only by radiation from the surrounding surfaces. The rise of temperature of the instrument continues at a rapidly decreasing rate until the quantity of heat received by the instrument by radiation from the hot surfaces is equal to the quantity given off to the stream of gas; the temperature of the instrument then remains constant. With these equilibrium conditions the temperature of the instrument is somewhere between that of the surrounding surfaces and that of the stream of gases; in other words, it is higher than the temperature of the gases which the instrument is supposed to measure. The difference between the temperature of the gases and that indicated by the instrument is the radiation error.

The magnitude of the error depends

A paper presented at a recent meeting of the American Society of Mechanical Engineers.

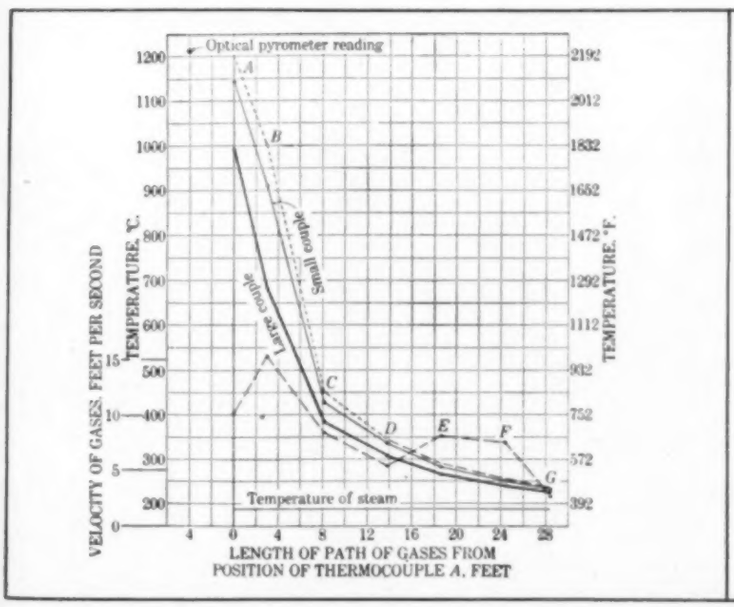


FIG. 1—TEMPERATURE OF GASES AS THEY PASS THROUGH A BABCOCK & WILCOX BOILER

The heavy curve connects readings obtained with a couple 0.5 inch in diameter and the light curve readings obtained with a couple 0.008 inch in diameter. Dotted curve is estimated true temperature of gases. Curve drawn in dashes shows approximate velocity of gases

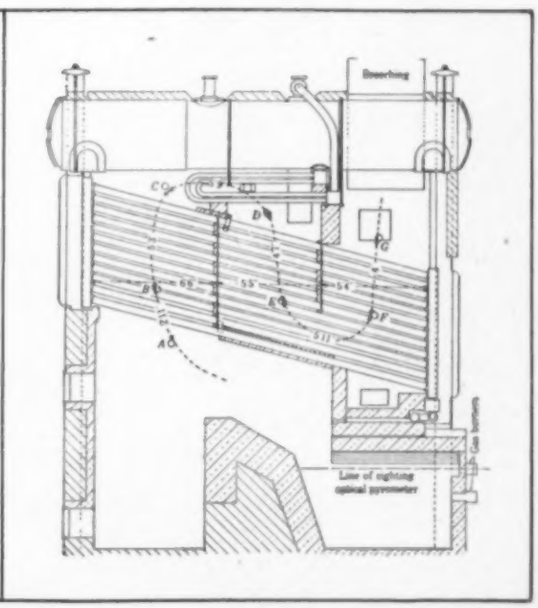


FIG. 2—SETTING OF GAS-FIRED BABCOCK & WILCOX BOILER IN WHICH THE MEASUREMENTS WERE MADE — TOTAL HEATING SURFACE, 3400 SQUARE FEET; STEAM PRESSURE, 165 POUNDS BY GAGE

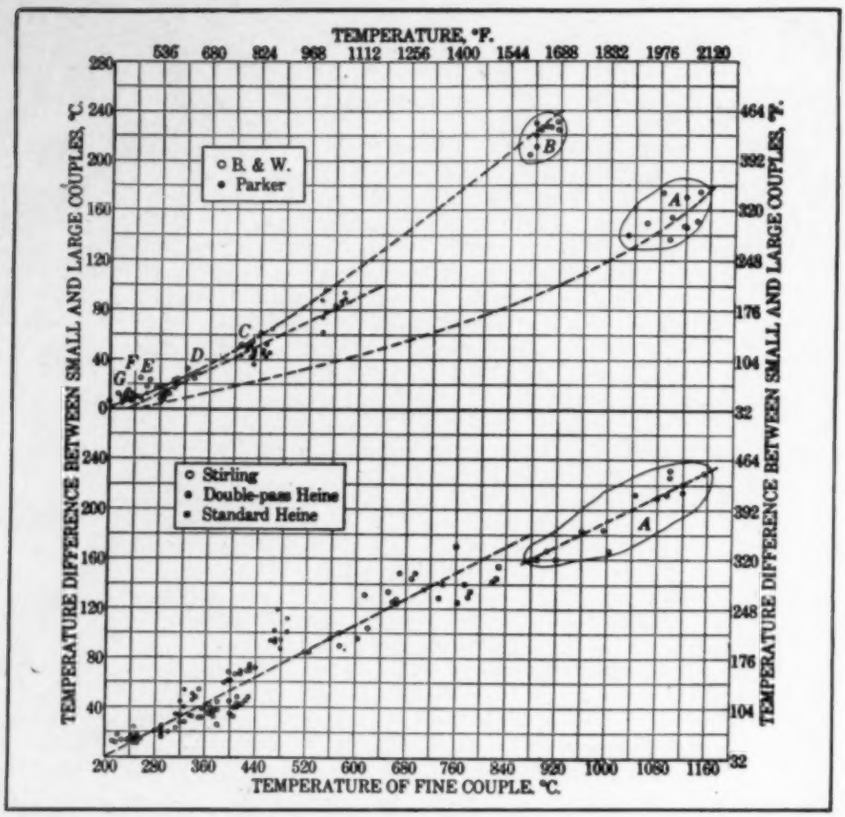


FIG. 3—EFFECT OF TEMPERATURE OF GASES ON RADIATION ERROR IN VARIOUS TYPES OF BOILERS

mainly on the size of the part of the instrument exposed to the gases and the radiation, and difference between the temperature of the gases and the temperature of the surrounding surfaces. The smaller the exposed part of the measuring instrument, the smaller the radiation error; also, the smaller the difference between the temperature of gases and the temperature of the surrounding surfaces the smaller the radiation error. In the measurement of the temperature of gases only the first-named factor can be controlled. The second factor is fixed by the kind of apparatus and its operation.

The effect of the size of thermocouples is shown in Fig. 1 which gives two sets of temperature measurements of the gases passing through a Babcock & Wilcox boiler fired with natural gas. One of these sets of measurements was taken with thermocouples having the hot junction made of wires 0.008 inches in diameter and the other set with couples having the hot junction parts made of tubes about 0.500 inch in diameter. This large couple is about the size of commercial instruments used for such purposes. Several thermocouples of each size were made and clamped together in pairs, each pair containing a large couple and a small couple, with their hot junctions about 1½ inches apart. These pairs were placed at different points along the path of gases, indicated by the small circles and designated by the letters *A*, *B*, *C*, *D*, *E*, and *F*, in Fig. 2. All the couples were connected to a central switch and read in rapid succession with a portable potentiometer. While the readings were taken the furnace conditions were kept uniform, which was a comparatively easy task with the gas firing.

Exposition of Curve

In Fig. 1 the abscissa are the approximate lengths of the paths of gases, measured fram the position of the first pair of couples *A*. The full heavy curve connects the readings obtained with the large couples, and the full light curve the readings obtained with the small couple. The dotted curve above the full curves gives the probable true temperature of the gases which was obtained by extrapolation from the readings of the two couples of different sizes. The curve near the bottom of the figure (drawn with dashes) gives the approximate velocity of the gases computed from the volume of gas burned, the chemical analysis of the products of combustion and the true temperature of the gases. The small black circle at the upper left-hand corner gives the furnace temperature as measured with the optical pyrometer sighted through one of the gas burners, as shown in Fig. 2.

The two full curves of Fig. 1 indicate that the small couples consistently showed temperatures considerably higher than the large couples, although the small couples themselves read somewhat too low. The difference between the readings of the two couples is nearly proportional to the difference between the true temperature of the gases and the temperature of the surrounding boiler surfaces which was about 50 degrees higher than the temperature of steam in the boiler. The large couple at *B* shows a radiation error of about 575 degrees Fahr., whereas the small couple at the same place indicates an error of only 150 degrees Fahr. In position *F* where the temperature of the gases is much lower, the large couple reads only about 25 degrees Fahr. too low, and the small couple shows an error of only 5 degrees Fahr.

Construction of Holder

The water-cooled holder of the platinum couples was made of three concentric copper tubes arranged in such a way that the cooling water flowed twice the full length of the holder. The outside tube was ¾ inch, making the holder of convenient size for manipulation. The cold junctions of the couples were placed in a water bath attached to the cold end of the couples.

Fig. 3 shows how much lower the large couples read than the small ones when the couples were placed in the boiler settings of five of the common types of water-tube boilers. The readings were plotted on two charts to avoid crowding the points. With the exception of the groups marked *A*, all the readings were obtained with the thermocouples placed among the tubes, or in other places where they were almost totally exposed to the heating surfaces of the boilers.

The group *A* of the Babcock & Wilcox boiler was obtained with the thermocouple placed in position *A*, Fig. 2. In this position the thermocouples were exposed partly to the boiler tubes and partly to the brick walls and the clay-tile furnace roof, which latter surfaces were much hotter than the boiler tubes. Therefore the thermocouples did not lose as much heat by radiation as those couples which were completely surrounded by the boiler tubes, and their radiation error was smaller.

Group A of the lower half of Fig. 3 was obtained with the couples placed about 1 foot above the arch and 1 foot from the front nest of tubes in a setting of standard Stirling boiler. They were therefore exposed partly to the boiler tubes and to some extent also to the hot brickwork of the furnace. Therefore the radiation error of these couples was somewhat smaller than the radiation error of the other couples

completely surrounded by the boiler tubes.

To determine the nature of the relation between the radiation error and the size of the hot junction of a thermocouple, four thermocouples of different sizes were clamped together and placed in a setting of a Heine boiler in a position similar to *A*, Fig. 2. The diameters of the hot junctions of these couples were 0.008, 0.025, 0.31 and 0.45 inch. These couples were clamped together in such a way that the two small couples were between the large ones, the distance between the hot junctions of the two end couples being 4 inches. The couples were read in rapid succession by means of a multiple switch and a potentiometer. In all cases the smallest couple has the smallest radiation error and therefore reads the nearest to the true temperature of gases on the inside of boiler.

It is apparent that the radiation error has a definite relation to the size of the part of the couple containing the hot junction. Very likely it is the extent of the surface of the hot junction which determines the magnitude of the radiation error. Inasmuch as the surface is proportional to the diameter, the radiation error should have a rather definite relation to the diameter of the hot-junction part of the couple. As the diameter of the hot junction of the couple decreases, the temperature indicated by the couple rises, at first very slowly, but after the diameter of about 0.100 inch is passed this rise in temperature becomes very rapid; and also, the greater the difference between the temperature of gases and that of the surrounding surfaces, the steeper this rise.

Builds Dust-Tight Crane

BY G. G. ROBBINS

ONE of the worst enemies of steel mill traveling cranes is dust. It attacks the armatures and gets between the bearings, causing serious wear. At some plants the motors and other important appliances on the crane are cleaned two or more times a week with compressed air. This method of cleaning is effective to a certain extent, but there have been cases where more harm has been done than good. One of the most effective ways to protect the working parts of a crane is to enclose them in dust-tight compartments.

A crane designed on this principle was recently installed at the Cuyahoga Works of the American Steel & Wire Co., Cleveland. It was built by the Shepard Electric Crane & Hoist Co., Montour Falls, N. Y., and is said to be the first crane of its type to be placed in operation. The crane has a span of 76-2/3 feet and a capacity of 10 tons. The electrical wiring is so arranged that a magnet can be operated whenever desired.

The hoist and bridge carriages move on rolled steel wheels. The latter are fitted with gears and jig-drilled spiders of the Shepard type. To provide sand for the rails and overcome slippage, the crane trucks are equipped with a cylindrical container as shown in Fig. 1, the outlet of each being positioned directly over the rail. The rails are sanded by pulling a lever which is located in the operator's cab and connected to a control valve in the base of each container. The valve is automatically closed by means of a compression spring.

Driving Shaft is Encased

The bridge driving shaft is entirely enclosed in standard boiler tubing, as shown in Fig. 2. Each end of the tube is inserted in collars of the flare type, which are cast in two sections and clamped directly to the bearings. Spring bumpers are provided. They are so designed that when the front wheels strike the bumping blocks, the shock is distributed between the coils of the spring, and friction between the wheel, bumper and bumper support. Runways, which are provided on both sides of the crane, are supported by angles securely bolted to anchor lugs, which are fastened to the bridge girders. A steel stairway connects these runways with the operator's cab. The latter is enclosed with glass windows, steel sash being used throughout. The sash are held in place by springs and may be opened or closed by sliding to the left or right, as the case may be. The floor of the cab is steel plate covered with asbestos board for safety. At the rear of the cab there is a cage-shaped compartment. It is made of channels and supports a switchboard, which is equipped with switches, breakers, fuse blocks, etc., used in operating the crane. This arrangement permits easy access to the electrical equipment in case operating difficulties are encountered or repairs are necessary.

On the plain side of the crane, the conductors for the hoisting and trolley motors provide a railing for the runway. The conductors are of the weatherproof, T-bar type and are supported by porcelain insulators. Platforms with toeboards and hand railings are provided on each side of the hoist carriage to permit the workmen to repair or oil the working parts of the machinery with safety. The hoist carriage is equipped with an automatic reel, which is used for winding the power line attached to the magnet. The sheave block upon reaching its maximum safe elevation is automatically stopped by means of a Palmer-type limit switch which throws off the current and causes the

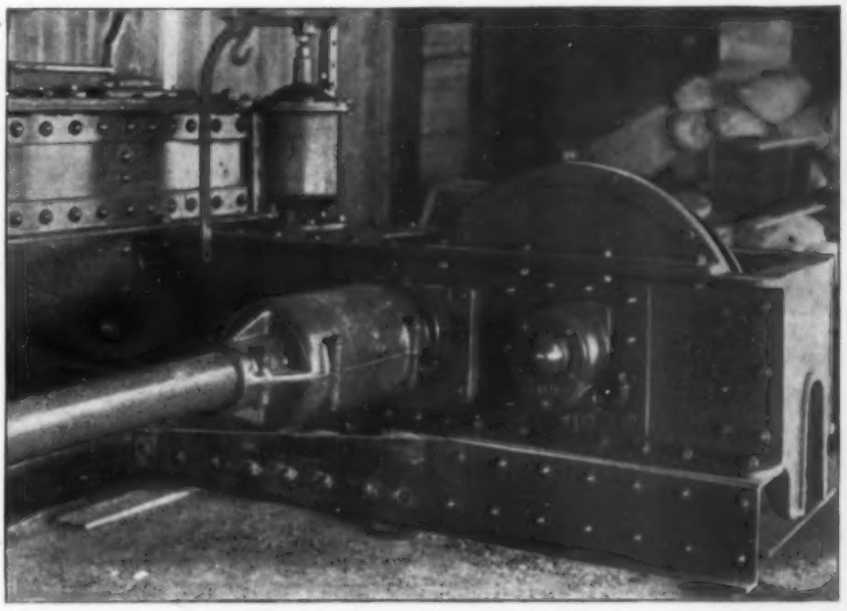


FIG. 1—DRIVING SHAFT ENCASEMENT, SAND CONTAINER AND PART OF CRANE CARRIAGE

The author is chief draftsman for the Shepard Electric Crane & Hoist Co., Montour Falls, N. Y.

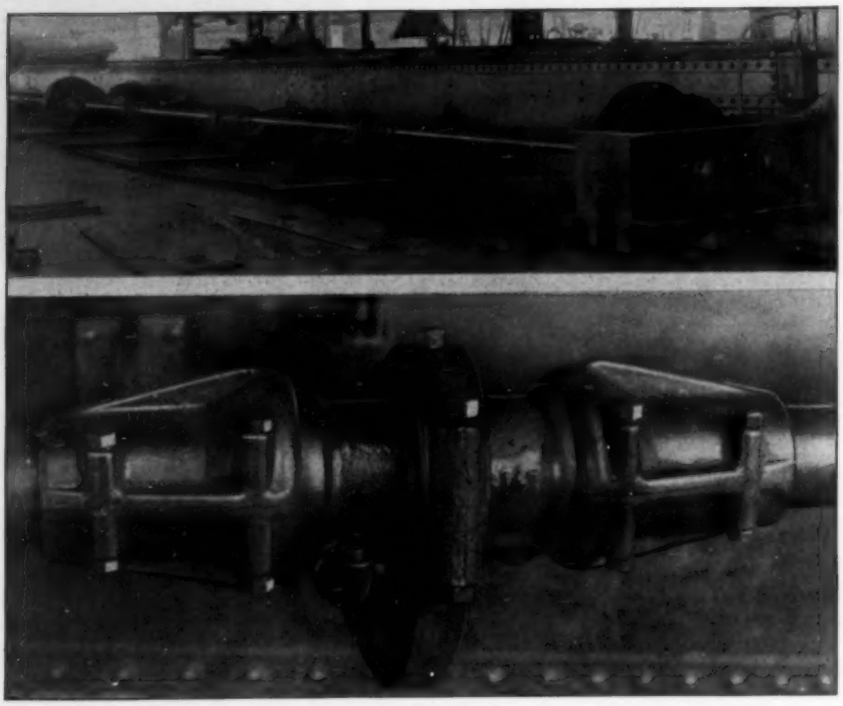


FIG. 2—ENCLOSED TROLLEY MOTOR, DRIVING-SHAFT COVERING AND COUPLINGS. FIG. 3—CLOSE-UP VIEW OF FLARE-TYPE COUPLING

dynamic brakes to be applied instantly. The sheaves are entirely enclosed in the hoisting block. The latter is equipped with a hook which is manipulated by means of a handle welded onto one side.

Spring Meeting Program

The final details of the program for the spring meeting of the American Society of Mechanical Engineers, which will be held at Worcester, Mass., June 4-7, have been completed. The meeting will be formally opened at 8 p. m., June 4, by addresses of welcome by Pehr G. Holmes, mayor of Worcester; Ira N. Hollis, president, Worcester Polytechnic institute, and R. Sanford Riley, president, Worcester chamber of commerce. The evening program will be concluded by an address by Charles G. Washburn entitled "The Growth of an Industrial City".

Wednesday, June 5, has been set aside as New England day. The professional sessions will be held at the Worcester Polytechnic institute. The following papers will be presented:

"The Small Industry in a Democracy", by George H. Haynes; "The Textile Industry in Relation to the War", by J. E. Rousmaniere; "Foundry Cost and Accounting System", by W. W. Bird, professor of mechanical engineering, Worcester Polytechnic institute; "The Public Interest as the Bedrock of Professional Practice", by Maurice L. Cooke, consulting engineer, Philadelphia; "Moisture Reabsorption of Air Dried Douglas Fir and Hard Pine and the Effects on the Compressive Strengths"; by Irving H. Cowdrey; "A High Speed Air and Gas Pressure", by Lieut. J. L. Alden; and "Investigation of the Uses of Steam in the Canning Industry", by J. C. Smallwood.

At a special New England session to be held Wednesday afternoon papers will be presented on subjects relating to New England industries under war conditions, including: "Converting a Factory for Munitions Manufacture", "Fire Protection", "Training Labor for Shipbuilding", and "Oil Fuel in New England Power Plants".

A sectional meeting under the auspices of the subcommittee on protection of industrial workers also will be held Wednesday afternoon to consider topics relating to industrial safety and workmen's compensation.

On Wednesday evening a general war session will be held at the Hotel Bancroft. The following general theme will be discussed: "How the Engineering Societies Can Assist in the Procurement Program of the Government".

Thursday's Program

Simultaneous sessions on general subjects, fuel problems and vocational training will be held Thursday morning, June 6 at Worcester Polytechnic institute. The following papers will be read and discussed:

"Efficiency of Gear Drives", by C. M. Allen, professor of hydraulic engineering, Worcester Polytechnic institute, and F. W. Roys; "Self-Adjusting Spring Thrust Bearings", by H. G. Reist, designing engineer, General Electric Co., Schenectady, N. Y.; "Air Propulsion", by Morgan Brooks, professor of electrical engineering, University of Illinois; "The Elastic Indentation of Steel Balls Under Pressure", by C. A. Briggs, W. C. Chapin and H. G. Heil, bureau of standards, Washington, D. C.; "Electric Heating of Molds", by Harold E. White, engineer, Crocker-Wheeler Co., Ampere, N. J.; "Stresses in Machines Starting or Stopping", by F. Hymans, engineer, Otis Elevator Co., New York; and "An Investigation of the Fuel Problem in the Middle West", by A. A. Potter, professor of mechanical engineering, Kansas State Agricultural college, Manhattan, Kans. Topical discussions on fuel economy and on the Boston system of vocational training also will be held.

The entertainment features have been carefully worked out. The usual opening reception and dance will be held Tuesday evening, June 4. Luncheon will be served at the Worcester Polytechnic institute on Wednesday and at the plant of the Norton Co. on Thursday. Various important manufacturing plants in Worcester and vicinity will be visited, including the Crompton & Knowles Loom Works, Norton Co. and the Royal Worcester Corset Co. There will be a tea and reception at the Tatnuck country club Wednesday afternoon and a dinner at the Worcester country club Thursday evening. Friday will be devoted to an all-day automobile trip to Camp Devens, Clinton dam, Concord and Lexington.

Plan Big Navy Shops

Boston will become one of the largest ship-repair ports on the Atlantic coast if plans now being considered by the navy department to enlarge the Charlestown navy yard into a big ship-repairing base, meet with approval. Among the provisions of the plans are a permanent extension of the navy yard piers, the building of several new piers, the erection of a new foundry, machine shops, boiler shops, power plant, a big storehouse, and a new administration building, beside an entire rearrangement of the present layout of the yard and an enlargement of the yard itself. The proposed development, it is estimated, would cost about $7,000,000. The plans for the improvements have been maturing quietly for several months.

To Build New Plant

Because in its present location the C. O. Bartlett & Snow Co., Cleveland, manufacturers of elevating and conveying machinery, has no room for expansion, it has purchased six acres in Harvard avenue, Cleveland. Construction of a new plant will commence in the near future.

War Labor Board at Work

Strikes at Pittsfield, Mass., and Chicago Settled by Its Action—Other Strikes Demand Attention

DUE to intervention by telegram from Secretary of Labor Wilson, the anticipated general strike, May 7, at the plant of the General Electric Co., Pittsfield, Mass., did not materialize. Both sides agreed to the suggestion of Secretary Wilson that the matter be laid before the recently appointed war labor board at Washington. An increase of 25 per cent in wages and new working conditions were the demands made. Originally but 200 employes were affected, mostly cranemen, but a general strike would call out about 7000 employes.

On account of the pressing demands for machinery at the present time as a part of the war program, the prospective closing of the plant on account of a strike was not countenanced in Washington. The metal trades union met and its action in which it was voted to let nothing interfere with the strike was rescinded. The electrical workers' union also voted to call off the strike and accept the proposition as made by Secretary Wilson. A committee of five to represent the employes, was appointed and will meet in conference with the war labor board at Washington at an early date.

Chicago Strike Settled

This board was recently called in to adjust the strike of molders and coremakers at Chicago, who went out on strike May 1, from 18 jobbing foundries employing approximately 1200 molders. Originally the foundries posted notices that on May 1 the molder wage rate would be $5.25 per day of eight hours with no Saturday half-holiday. The men demanded $6 per 8-hour day with Saturday afternoon off. Negotiations brought the demand to $5.50 per day of eight hours, which the men stated would be their lowest figure. A compromise was affected. Since no effort was made by foundrymen to operate their plants in the interval, the strike was entirely peaceful. Recent labor disputes settled by the conciliation department of the labor bureau include a lockout at the Hawkeye Foundry Co., Waterloo, Ind.; a threatened strike at the Fulton Machine Co., Knoxville, Tenn., and strikes at the Mackle Construction Co., Atlanta and Ft. McPherson, Ga., the American District Steam Co., Tonawanda, N. Y., and the St. Joe Lead Co., Herculaneum, Mo. In handing down its decision in the recent controversy between the telegraph companies and their telegraphers, the national war labor board ruled that American workers have the right to organize and join unions. The companies were asked to refrain from discharging employes for union affiliation and otherwise to abide by the principles laid down in the President's recent proclamation. At the same time the board directed its joint chairman, William Howard Taft, and Frank P. Walsh to make a further attempt to bring about mediation of the difficulties between the two parties.

Other strikes in the eastern territory include one of about 100 machinists and toolmakers in 22 of the smaller plants in Bridgeport, Conn., where a minimum wage scale of 70 cents an hour for the former and 80 cents an hour for the latter was demanded. It was claimed that these were the rates paid in the larger factories. This strike, which tied up these 22 small factories for more than a week and which had seriously affected several of the larger plants, came to an end May 11. On May 8, however, 420 machinists and toolmakers representing 30 per cent of the men employed, walked out of the Remington Arms-Union Metallic Cartridge Co.'s shop in Bridgeport. Toolmakers demanded 80 cents an hour and machinists 70 cents as a minimum. A closed shop likewise is demanded. These workmen have been receiving 60 and 70 cents respectively. Similar demands were made the following day by the 300 toolmakers and machinists employed by the Liberty Ordnance Co. Draft officials have requested lists of strikers so that they may be examined and immediately sent into military service. The Remington company has canceled all contracts with 20 shops in that city for the making of Browning machine gun tools and parts and will transfer them to factories in the middle west which have been either closed or running on part time owing to the government orders covering the manufacture of automobiles and nonessentials. In these strikes, it is expected that the national war labor board will play an important part.

About 175 iron molders are on strike in all Lowell, Mass., foundries, except the Saco-Lowell shops, for an advance of from $4.50 a day to $5.25. They claim the working agreement expired May 1, while owners say the date is June 17.

The strike of machinists in the large mills in that city for time and a half for overtime still continues.

Seek Government Backing in Housing Projects

Among the communities making surveys to back their requests for appropriations by congress to build workmen's homes are Cleveland and Bridgeport, Conn., as well as many of the shipbuilding districts. The housing committee of the Cleveland chamber of commerce is obtaining data with which to support a request for $1,000,000 from the government. Last fall 10,000 additional homes were needed and the growth of the war industry in Cleveland since has made housing conditions more acute.

The Bridgeport Housing Co., Bridgeport, Conn., will erect 1000 brick single and double houses to cost $3,000,000, the money for which has been secured by a government loan. The houses will be standardized as in other cities where the government has taken a hand in the building program. Actual construction work will be started as soon as possible and it is hoped to have the houses ready for occupancy by Nov. 1.

In harmony with the much-followed policy in Washington of vesting authority in one head, A. Merritt Taylor, formerly chief of the Philadelphia department of transit, has been appointed director of housing and transportation of shipyard workmen throughout the country, under Charles M. Schwab, director general of the Emergency Fleet corporation.

Housing projects to cost approximately $10,000,000, for shipyard workmen at Hog Island, Pa.; Newport News, Va.; Camden, N. J.; Chester and Bristol, Pa.; Sparrows Point, Md.; Baltimore, and Wilmington, N. C., have been announced by the United States shipping board. Between $2,000,000 and $2,500,000 will be spent on work to be done at Camden, N. J., where a model village for the workmen is to be erected.

Contemplated plans of the Emergency Fleet corporation include the erection of 100 residences to cost $500,000 for the employes of the Bath Iron Works, Bath, Me., and also 200 to cost $700,000 for the employes of the Texas Steamship Co., of that city. Both yards are producing vessels for the government.

To

The Sub-committee on Pig Iron, Iron Ore and Lake Transportation of AMERICAN IRON AND STEEL INSTITUTE,
808 Western Reserve Bldg., Cleveland, Ohio, Being a Certified Statement (to Producer's Best Knowledge and Belief) of Contractual Obligations of ..... (NAME)
to Deliver Pig Iron During the Period Between May 1 and Dec. 31, 1918, Inclusive.

Number of Stacks Available May 1 to Dec. 31, 1918 ..... Total Monthly Capacity ..... Tons. Estimated Production Balance of Year, Starting May 1

CUSTOMER	PLACE OF CONSUMPTION	UNFILLED TONNAGE MAY 1, 1918	GRADE	DELIVERY PERIODS								TOTAL PIG IRON CONSUMPTION May 1 to Dec. 31	PIG IRON ON HAND AND IN TRANSIT MAY 1	EMER. FLEET CORPN.	
				MAY	JUNE	JULY	AUGUST	SEPT	OCT	NOV	DEC			% DIRECT	% INDIRECT

Unfilled Purchases From Other Furnaces, Balance of

Form Used by Pig Iron Producers in Reporting Condition of Their Order Books and of

Pig Iron Rapidly Reaching War Footing

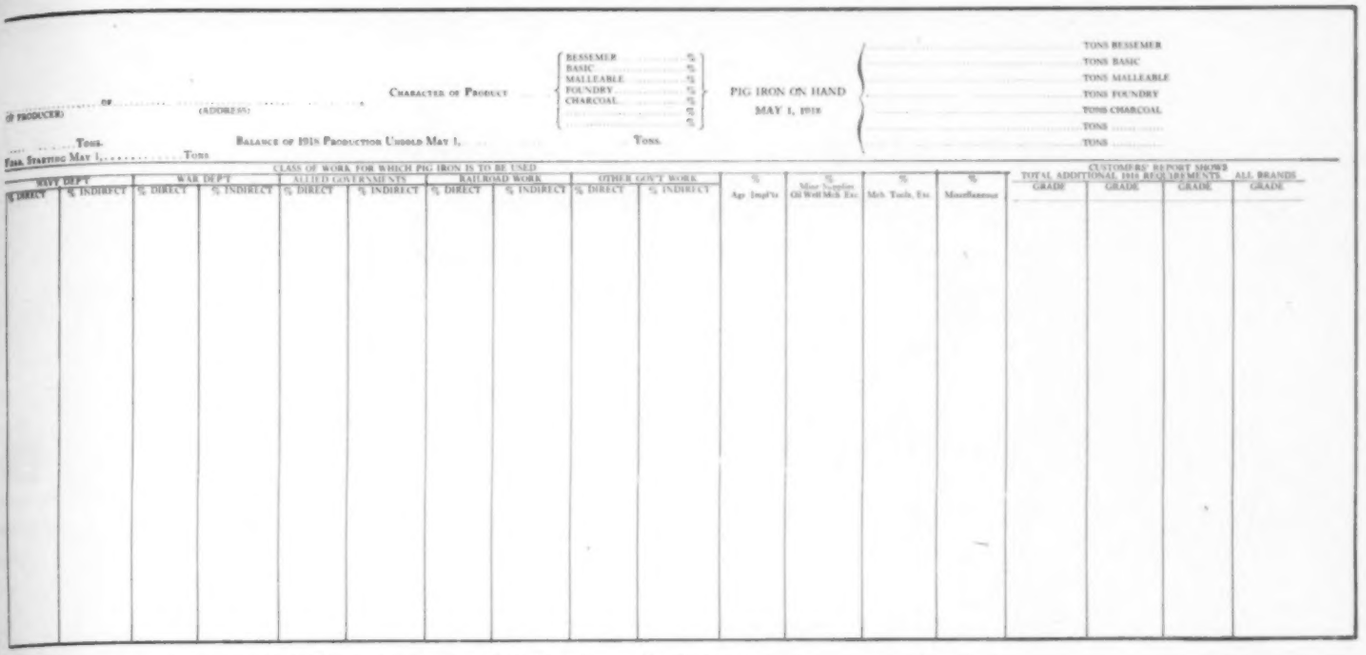
PRELIMINARY to exercising a complete control over the distribution of pig iron so that available supplies shall be applied to the war requirements of the government and its allies in accordance with their importance, the subcommittee on pig iron, iron ore and lake transportation of the American Iron and Steel institute now is taking a true and comprehensive inventory of the industry. This effort will lead to the compilation of data covering every phase of manufacturing and sales conditions in the pig iron industry. It will serve the basis for a close and intelligent supervision both of the pig iron market and of shipments from this time forth under war conditions. The subcommittee which is in charge of the work is made up of H. G. Dalton, chairman, Pickands, Mather & Co., Cleveland; C. D. Dyer, W. P. Snyder & Co., Pittsburgh; Leonard Peckitt, president, Empire Steel & Iron Co., Catasauqua, Pa.; W. T. Shepard, Rogers, Brown & Co., Buffalo; A. H. Woodward, Woodward Iron Co., Birmingham, Ala.; Frank Billings, Tod-Stambaugh Co., Cleveland; H. Coulby, president, Pittsburgh Steamship Co., Cleveland; Frank B. Richards, M. A. Hanna & Co., Cleveland; Amasa S. Mather, Pickands, Mather & Co., Cleveland, secretary.

Suitable forms have been prepared by the subcommittee and now are being circulated among both producers and consumers of pig iron for the collection of the desired data. One of these forms which is reproduced herewith calls upon the furnaces to render to the subcommittee a complete statement of the present condition of their order books, giving a list of customers to whom they are now obligated by contract, and the deliveries required. In addition the estimated production of the individual makers for the balance of the year dating from May 1, any tonnage that may remain unsold for that period, the character of iron now being made or the approximate percentage of each grade where several are produced, is being requested. The return of the producer is to be made in duplicate, the original going to J. Leonard Replogle, director of steel supply at Washington.

Insure Coke Supply

A second form has been prepared by the subcommittee and has been forwarded to the various producers for the latter's distribution in turn to their respective customers. This canvass is to determine how much iron is on hand at plants or is in transit for respective consumers; the probable consumption of these plants for the year dating May 1, the portion of these requirements not now covered by purchase, and the percentage of the company's business that is either directly or indirectly for government use. The government business is to be further analyzed where it is of direct character to show for what department the iron is required. The division of war business includes orders for the Emergency Fleet corporation; for the navy department; for the war department; for the allied governments; for railroad work; for agricultural implements; for mine supplies, oil well and fuel oil machinery and other fuel work; for machine tools, cranes and other machinery directly connected with the conducting of the war and not elsewhere included in the report; and for miscellaneous work not otherwise included. On the tonnage required for the indirect purposes of war, the use to which the material is to be put is to be declared.

In connection with government supervision over the sale and distribution of pig iron, energetic efforts are to be made through the war industries board to maintain the production of the furnaces at 100 per cent. Careful attention is to be given to the matter of supplying the furnaces with their full requirements of coke. In this connection it now is believed that the railroad transportation difficulties which have been the main factor in the irregularity of coke supply, have been obviated. The pig iron producers are requested whenever their coke supply is found insufficient to get immediately in touch with J. Leonard Replogle, director of steel supply at Washington, and to advise whether this delay arises from the lack of proper railroad transportation, or through the fail-



Operations to Steel Director and Institute Committee. Original Goes to Steel Director

ure of the coke producers to fill orders.

A general letter setting forth the purposes and desires of the subcommittee in collecting the statistical information relative to the pig iron industry has been sent out to the various producers accompanying the report forms. This letter is as follows:

Dear Sir:—

As you probably have already been advised direct from the American Iron and Steel institute, the producers of iron and steel products are taking pledges binding themselves to make their product as large as possible during the remainder of the war and to see that the requirements of the government and its allies are first supplied. All of this at the request of the war industries board. Doubtless you have already for your company and personally subscribed to this pledge.

The demands of the government for pig iron direct and indirect are going to be very large and at the request of the director of steel supply of the war industries board this committee has been asked to make a careful canvass of the pig iron situation and be ready from time to time to advise them where the necessary requirements of the government can be supplied. In order to do this intelligently this committee has decided to send you this letter with blanks, asking for certain statistics and showing your orders on hand, to whom the iron has been sold, the deliveries required, your estimated production for the balance of the year starting from May 1, and also showing any balance that you may have unsold; approximately the character of iron you make (that is, foundry, malleable, basic, etc.) or the approximate percentage of each, if you make all kinds.

The committee also requests that you immediately make a canvass of your customers to determine how much pig iron they have on hand at their respective plants, their probable consumption of pig iron for the balance of this year from May 1 and the percentage of their business that is either directly or indirectly intended for government use. The direct business should state for what department of the government their iron is being shipped and the indirect, for what purpose the material is being used. It is hoped that these figures can all be in within the next two weeks and therefore, you are urgently requested to compile them and send them in without delay. In order to facilitate this report, forms will be furnished promptly to you by the committee, which blanks we suggest be mailed by you to your customers, in order that the proper information may be obtained in a uniform manner. An appropriate letter should accompany these blanks urging consumers to promptly furnish the data requested and emphasizing the importance of their earnest cooperation.

The committee also begs to advise you that the war industries board has been energetically working to secure the blast furnaces of the country a full supply of coke, and they believe that as far as railway transportation matters are concerned that the difficulties have been practically obviated. They request that you telegraph J. Leonard Replogle, director of steel supply, war industries board, Washington, D. C., at any time you find your supply is insufficient, stating the cause, whether it is from the lack of proper railroad transportation being furnished you or through the failure of the coke producer, if he in turn is not filling your orders. This advice will enable them to further pursue their efforts to see that you are fully supplied. The war industries board will feel, in case they do not receive advice of insufficiency of coke supply, that the pig iron producer will not have cause for complaint if his plant is not operated to its full capacity, barring of course accidents or other causes beyond his control.

The producer's report is to be made in duplicate; the original to be mailed to J. Leonard Replogle, director of steel supply, war industries board, Washington, D. C., and the duplicate to the undersigned.

Your hearty and prompt co-operation in all of these matters will be greatly appreciated.

Sincerely yours,

(Signed) H. G. DALTON,

Chairman, Pig Iron, Iron Ore and Lake Transportation Subcommittee.

Letter to Consumers

A copy of the letter which prominent producers are sending out to their customers soliciting data regarding the latter's present uses of iron, as

American Iron and Steel Institute

Committee on Steel and Steel Products

Sub-Committee on Pig Iron, Iron Ore and Lake Transportation

OFFICE: 800 WESTERN RESERVE BUILDING
CLEVELAND, OHIO

The following information is desired from .....
(NAME OF CONSUMER)

.....
(ADDRESS)

who will kindly furnish same and mail promptly to .....
(NAME OF PRODUCER)

.....
(ADDRESS)

	TONS	GRADE
Estimated monthly Pig Iron consumption from 1st day of current month to Dec. 31, 1918	.....	.....
Total Pig Iron in Stock and in transit on 1st day of current month - - -	.....	.....
Total Pig Iron to be delivered from all sources on all contracts from 1st day of current month to Dec. 31, 1918 - - - - - - - - -	.....	.....

The class of work for which this iron is to be used is as follows :	DIRECT ORDERS	INDIRECT ORDERS
Orders from Emergency Fleet Corporation, percentage, (see Note) - -	.....%	.....%
Orders for Navy Department - - - - - - - -	.....%	.....%
Orders for War Department - - - - - - - -	.....%	.....%
Orders for Allied Governments - - - - - - -	.....%	.....%
Orders for Railroad Work - - - - - - - -	.....%	.....%
Orders for other Government Work - - - - - -	.....%	.....%

Please show Government Numbers on reverse side of this form, and on Indirect Government Orders give name and address of your Principal.

Orders for Agricultural Implements - - - - - - -	.....%
Orders for Mine Supplies, Oil-well and Fuel-oil Machinery and other Fuel Work	.....%
Orders for Machine Tools, Cranes, and other machinery directly connected with Conduct of War, and not elsewhere included in this report - - -	.....%
Orders for Miscellaneous Work not elsewhere included in this report - -	.....%

*NOTE:-In all cases the above percentages are to be calculated upon the Estimated Total Pig Iron Melt, (scrap excluded) between 1st day of current month and Dec. 31, 1918

Sum of percentage in above columns should equal 100%

	TONS	GRADE
Additional Pig Iron requirements (All brands) for use prior to Dec. 31, 1918, and not provided for - - - - - - - - - -	.....	.....
	.....	.....
	.....	.....
TOTAL		TONS

The accuracy of the above report is Certified to as being substantially correct to the best of my knowledge and belief.-

.....

Date..... .....

FORM SENT TO CONSUMERS FOR DATA ON THEIR USE OF PIG IRON IN ORDER TO DETERMINE THEIR WAR STATUS

requested by the pig iron committee, is given below:

Gentlemen:—

The government demands for pig iron direct and indirect are increasing rapidly, and at the request of the war industries board, the American Iron and Steel institute, has been asked to make a comprehensive survey of the situation, and therefore, all of the producers, in addition to furnishing information pertaining to their operations, are called upon to immediately canvass all of the pig iron consumers in the United States, for the purpose of mobilizing the industry on a war basis.

In order to gather this information uniformly, the institute committee has provided the necessary blanks, one of which we are enclosing herewith, and we believe will be found self-explanatory and enable you to make return of the data required in an intelligent manner for the purpose intended, so that we can make our report through the medium that the government has designated to collect these statistics.

We are expected to report within a week, and some time will be necessary to compile the figures of all the customers on our books; therefore, cannot emphasize too strongly the importance of your giving the matter immediate and preferred attention.

Feeling confident of your willingness to heartily co-operate in hurrying the compilation of this data, which the national emergency seems to require, and thanking you in anticipation of the early return *to us* of the enclosed form properly filled out, we remain,

Very truly yours,

.....

Installing Special Mill

A modern mill for the rolling of special shapes entering into the manufacture of brake beams and of other special sections which the plant may handle advantageously, is being installed by the Pennsylvania Brake Beam Co., Danville, Pa. This extension of capacity is to round out the plant which the company has been practically rebuilding since acquiring it by purchase last July. This purchase followed the occupancy under lease of the plant for a number of years, after the company's removal from Easton, Pa., where it has outgrown its facilities. The plant originally consisted of a three-high 24-inch rolling mill, engines of 1000-horsepower capacity, and other equipment. All the new equipment required for the rebuilding of the plant has been installed, and this has been done without affecting production.

Refractory Costs

Being Investigated by Government—Recommendations Expected Soon

Pittsburgh, May 14.—Investigation being made by the federal trade commission into the cost of producing refractories is nearing an end. Producers expect to go to Washington this week and hold a conference with members of the commission and give the latter what information they can.

Refractories

(Per 1000 f. o. b. works)

FIRE CLAY BRICK.

(First Quality)

Pennsylvania	$45.00 to 55.00
Missouri-Illinois	55.00 to 65.00
Ohio	45.00 to 50.00
Kentucky	45.00 to 55.00
New England	55.00 to 65.00

FIRE CLAY BRICK

(Second Quality)

Pennsylvania	$40.00 to 50.00
Ohio	35.00
New England	48.00 to 58.00

SILICA BRICK.

Pennsylvania	$50.00 to 60.00
Chicago	55.50 to 65.50
Birmingham	45.00 to 55.00

MAGNESIA BRICK

(Per Net Ton)

9 x 4½ x 2½	$135.00 to 160.00

CHROME BRICK

(Per Net Ton)

9 x 4½ x 2½	$135.00 to 140.00

BAUXITE BRICK

(Per Net Ton)

55 per cent	$40.00 base
76 per cent	100.00 base

Soon thereafter the recommendations of the commission probably will be submitted to the war industries board and then to the President. Prices of all grades of refractory brick have remained unchanged since the United States entered the war and manufacturers feel confident that no reductions will be ordered by the government. Many assert that they cannot operate if levels are brought down, but instead are hoping that the government, after a thorough investigation, will find that higher prices are justified.

Fair sized quantities of second quality fire brick are being sold but other grades are not active, chiefly because makers are heavily committed on contracts and cannot take new business. It is understood that the government is seeking a large lot for the proposed nitrate plants.

War Convention

Of Allied Machinery and Supply Men Opens at Cleveland

Three large associations representing machinery and supply manufacturers and dealers, are holding a joint convention at the Hollenden hotel, Cleveland. The sessions of the National Pipe and Supplies association opened on Monday and continued until Wednesday, when the Southern Supply and Machinery Dealers', the National Supply and Machinery Dealers' and the American Supply and Machinery Manufacturers' associations met together in the first of a series of joint sessions at which war problems will form the chief topic of discussion. Technical papers will be presented and discussed in the open meetings by executives and experts from various large industries. Among the speakers scheduled are: W. O. Rutherford, general sales manager, B. F. Goodrich Co., Akron, O.; Melviille W. Mix, president, Dodge Mfg. Co., Mishawaka, Ind.; Farnham Yardley, vice president, Jenkins Bros., New York; Wm. Brooks Covell, president, International Leather & Belting Co., New York; William E. Manning, vice president, Youngstown Sheet & Tube Co., Youngstown, O.; N. J. Clarke, secretary, Upson Nut Co., Cleveland; David C. Jones, secretary, the Lunkenheimer Co., Cincinnati; Charles W. Beaver, Yale & Towne Mfg. Co., New York; George Vonnegut, Vonnegut Hardware Co., Indianapolis; W. E. Frick, Frick & Lindsay, Pittsburgh; F. H. Kramer, Somers, Fitler & Todd Co., Pittsburgh.

Financing under the present conditions will occupy a portion of the joint sessions, and speakers of national prominence will discuss the various phases of new capital, loans, collections and more particularly trade acceptance. Overhead expenses and federal tax questions will be the subjects of reports and general discussion, and the question of export trade following the war will have attention. The major topic of the meetings, however, will be the responsibility of the industries and activities represented, in the successful prosecution of the war. Ways and means of attaining top-notch efficiency will form the prime work of the convention.

The Cleveland committee, which has had the conventions in charge, include, W. M. Pattison, W. M. Pattison Supply Co.; H. W. Strong, Strong, Carlyle & Hammond Co.; S. D. Latty, Kirk-Latty Mfg. Co.; George M. North, Ferry Cap & Set Screw Co.; F. H. McIsaac, Kirk-Latty Mfg. Co.; and Harold D. North, Ferry Cap & Set Screw Co.

Getting Together With Uncle Sam

Manufacturers in Northern Ohio and Western Pennsylvania Launch an Organization to Correlate the Government's Needs With Existing Plant Facilities —Personal Information to Supplant Statistics

SERVICE implies a knowledge of the needs and desires of the institution or person served. In the turmoil of the first stages of the war, through which the country has just passed, service has been freely proffered by American manufacturers but efficient action has been hampered by inability to get together with the government. The difficulty in making connections with Washington, and the problem of determining what constitutes service on the part of the individual manufacturer endeavoring to engage his plant facilities, have rendered unavailable a great potential output of all classes of war materials. The situation has been aptly compared to a huge conflagration when every member of the fire department has been busily engaged, and an individual has rushed to the chief with the pertinent query, "What can I do?"

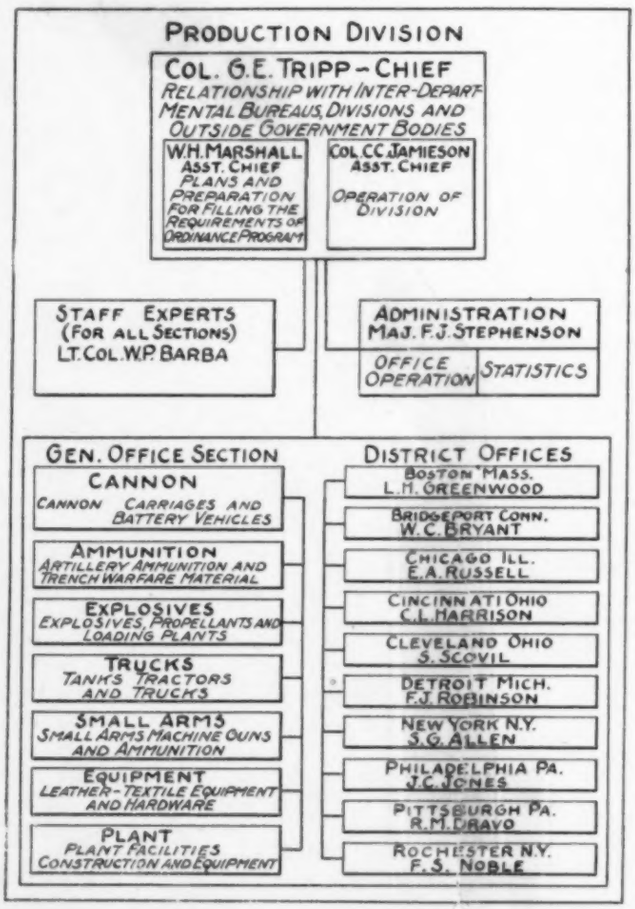
The purchasing power of the government, functioning through a number of separate agencies has achieved remarkable results, when the difficulties encountered are considered. With the exception of the iron and steel producers brought together through the American Iron and Steel institute and one or two other large well integrated industries, the manufacturers of the country have not been so organized as to furnish a unit, capable of stating definitely what may be expected in production. The departments charged with procuring the extensive miscellaneous materials and supplies for war have had to depend to a great extent upon statistics, laboriously collected, and upon the tender of service from large industries. In almost every case the initiative has been with the government.

All manufacturers have not awaited the government's call. Some have spent much time in Washington endeavoring to establish a point of contact, by which they would be enabled to secure contracts. Here again misunderstandings have prevented efficient action. The small manufacturer has been unable to handle orders involving millions when his plant output is in terms of thousands. Lack of technical knowledge and a real ignorance of the ability of his plant to furnish the articles wanted, also has contributed to the failure of the government to secure the service of a great number of operating plants.

The result of this absence of contact between the government and the average manufacturer has been the centering of work in the larger localities; the influx of labor and housing congestion in the cities, and an undercurrent of dissatisfaction from workers transplanted to strange communities, and from manufacturers able and willing to handle government work, who were unable to locate the proper channels through which to secure contracts. This latter is an insiduous danger to the civilian morale. It weakens the will to win.

The purchasing power of the government at the present time is vested in several departments, chief among which are the ordnance department, the quartermaster department, the navy, the signal corps and the Emergency Fleet corporation. The ordnance department and the quartermaster department are understood to handle over 70 per cent of the needs of the government.

The ordnance department has developed an efficient system for purchasing and supervising the manufacture of needed supplies. A procurement division of the ordnance department has charge of the contracts. Parallel with this division is an agency called the production division which becomes effective immediately upon the making of a contract, and also functions in an advisory capacity in the placing of contracts. The work of this production division is divided into 10 districts covering the area in which the bulk of the ordnance work is handled. Each of these districts is under the control of a chief with an organization which follows up, supervises and regulates production on all ordnance department contracts in that particular district. The producer deals directly with the district production department on all questions save those relating to price, quality and complaints. A personal contact is thus maintained, and first hand knowledge supplants or at least supplements statistics. The accompanying map and organization chart show the geographical boundaries, organization and supervising heads of this production division. Great service is being done by this division in following production in the plants, in securing the use of facilities needed in manufacture, and in procuring needed machines and supplies for factories operating on ordnance department work. Manufacturers have



ORGANIZATION OF PRODUCTION DIVISION OF THE ORDNANCE DEPARTMENT

appreciated the value of the decentralized control of war production. They have also come to a realization that the policy of "let the government do it" is harmful to themselves and to war-time factory output. Several broad-visioned business men in the Cleveland district of the ordnance production division conceived the idea that the contact should be made with the government through the initiative of the manufacturers. In other words, the manufacturers should so organize as to be able to say, "Here are our plants, our facilities are known, we can handle a definite amount of the task at hand."

Samuel Scovil, ordnance production chief, accordingly called a meeting of all manufacturers in the territory known as the Cleveland district of the ordnance production division. The problem was analyzed as consisting of two factors: the securing of information and the question of centralization of industries. The district was organized on the geographical lines bounding the Cleveland district of the ordnance production division. It was clearly indicated at the start that except for this identity of territory covered, the new war industries commission should be in no way connected with the ordnance department. Information is to be secured and distributed regarding proposed purchases of all kinds of supplies needed by the government.

The need of centralization was emphasized by the problem of gathering information relative to plants within certain territory and classifying and distributing information received from Washington regarding purchases. The Cleveland district was divided into eight subdivisions known as the Toledo, Lima, Mansfield, Columbus, Canton, Cleveland, Youngstown and Erie divisions, respectively.

These subdivisions proceeded to organize with the counties within their territories as units. The existing factors such as chambers of commerce, manufacturers associations, etc., were requested to form the respective county units. Each division then appointed a representative, who became a member of the district governing body or district executive committee.

Returning to the zones or divisions, the different industries were grouped under general headings as shown in the accompanying diagram. These industries designated committees, who possess a first hand knowledge of the capacity, personnel and amount of work on hand relative to each factory in their own industry in the division. Thus a foundry owner on the castings committee from Columbus will have personal knowledge of the tonnage of gray iron castings that can be obtained from every foundry in his division. Each zone, each county, and each city will have its committee for every general division under the classification of industries.

The headquarters of the commission were established in Cleveland. J. H. Foster, president of the Hydraulic Pressed Steel Co., Cleveland, was made chairman; C. A. Otis, Otis & Co., Cleveland, treasurer, and W. E. Tousley, Cleveland, secretary. It was

A Double Barrelled Organization

THE accompanying article describes the Cleveland plan for establishing a point of contact between manufacturers and the great purchasing agencies of the government, in order to facilitate the production of war materials. As a result of the development of this plan, two distinct war-service organizations are now functioning in the Cleveland district. First we have the Cleveland district war industries committee, an organization of manufacturers, with no official connection with the government, created solely to help manufacturers to obtain war contracts suited to their capacities and abilities. Second, and totally distinct from the Cleveland district war industries commission, is the Cleveland district organization of the production division of the ordnance department, created exclusively for the purpose of following up ordnance contracts after they are placed, thus keeping deliveries up to date. This latter organization is an official part of the government. In other words the war industries commission gets the contracts, as the representative of the manufacturers, while the production division of the ordnance department keeps track of and follows up ordnance department contracts on behalf of the government.

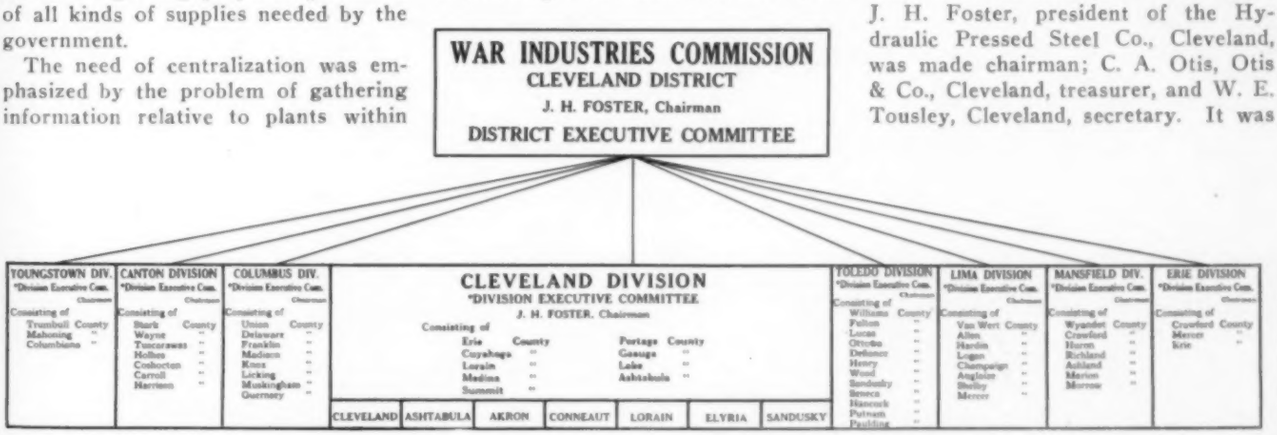


DIAGRAM SHOWING THE ORGANIZATION OF THE CLEVELAND DISTRICT WAR INDUSTRIES COMMISSION

The foregoing main divisions will be subdivided as noted under the Cleveland division and committees will be organized under the following general sections:

CASTINGS
- Aluminum and brass
- Gray iron
- Malleable
- Steel

FORGINGS AND STAMPINGS
- Drop forgings, light and heavy
- Gun forgings
- Shell forgings, large and small
- Stampings, heavy and light
- Sheet metal work, heavy and light

RUBBER PRODUCTS
- Solid tires
- Tires, tubes and accessories
- Clothing and footwear
- Mechanical goods
- Ball, airplane fabric
- Medical supplies
- Gas masks
- Hard rubber

CLAY PRODUCTS
- Chemical stoneware and apparatus
- Sewer pipe and hollow tile
- Insulators
- Common stoneware and tableware
- Conduits
- Brick, fire, paving and building

MACHINERY AND MACHINE PRODUCTS
- Electrical appliances
- Machinery
- Machine shop equipment
- Specialties
- Bar metal products

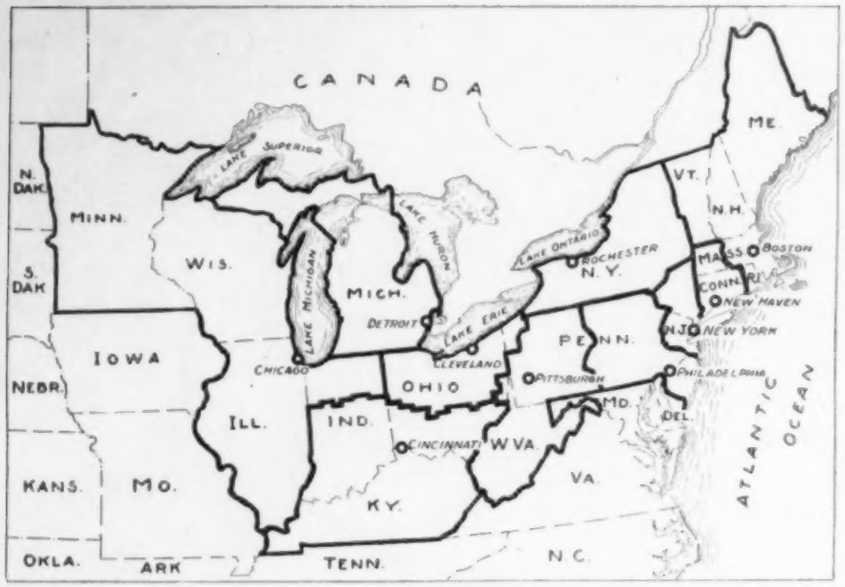
CHEMICALS, OILS AND PAINTS
- Oils, refiners, manufacturers and jobbers
- Paints, varnish and shellac
- Chemicals, acids, fertilizers and industrial chemicals

TEXTILES AND CLOTHING
- Knit Goods
- Shirts and overalls
- Sewing machines and products
- Uniforms
- Garments
- Caps and hats
- Woolens

WOOD AND LEATHER
- Paper boxes
- Wood cases
- Leather
- Truck bodies
- Mill work

ENGINEERING
- Plant survey
- Estimates
- Tools, jigs, gauges, etc.
- Production

AUTOMOTIVE



MAP SHOWING THE TEN ORDNANCE PRODUCTION DIVISION AREAS

determined to establish a Washington office, which will form the contact with the government's purchasing agencies. All information relative to proposed work will be communicated to the Cleveland office. From this point it will be sent directly to each of the zone centers where each inquiry will be analyzed, and communicated to the division committee interested and by them to each factory capable of bidding on the work. The intent is that each producer in the entire district shall have an equal opportunity to bid on all contracts and conversely that the government shall be put in touch with every manufacturer capable of doing a share of the work.

Value of Maufacturers' Committee

The separation of the zone organizations according to the different industries is significant. It will compel manufacturers in the same line of work to get together, and the final working part of the organization will consist of a number of industrial units, which will have their own committees of their own men in charge of interpreting the needs and fulfilling the requirements of the government. In the final analysis, the result will be a committee of foundrymen, of textile manufacturers or of leather men representing the district and capable of acting as a unit to absorb the immense volume of work to come. These men will be able also to say from first hand knowledge, not statistics, "This much can we do." The example of the efficacy of the American Iron and Steel institute is sufficient to establish the value of such knowledge and such an organization at this time.

Ingot Output

In April Matches Gain Shown in Pig Iron Production

Production of steel ingots in April followed the upward trend which marked pig iron output last month. In both instances the gain was a continuation of the striking recovery shown in March over the poor records of January and February.

The increase is reflected in the monthly statement just compiled by the American Iron and Steel institute showing the production of steel ingots by 29 companies which in 1916 made 88.14 per cent of the country's total output. These companies in April produced 3,163,410 gross tons against 3,110,381 tons in March. The average daily output was 105,447 and 100,335 gross tons, respectively. April's total was the highest of any month since October.

The record of steel ingot production by these companies since June 1917, follows:

Months: 1917:	Open hearth, gross tons	Bessemer, gross tons	All other, gross tons	Total gross tons
June	2,265,772	809,552	8,605	3,083,929
July	2,152,479	777,171	9,465	2,939,115
August	2,251,013	863,873	8,331	3,123,217
Sept.	2,195,556	770,064	6,639	2,972,259
Oct.	2,475,754	870,494	5,687	3,351,935
Nov.	2,384,218	772,489	9,550	3,166,257
Dec.	2,195,832	524,084	13,806	2,733,722
1918:				
January	1,763,356	429,588	10,901	2,203,845
Feb.	1,805,233	454,457	14,051	2,273,741
March	2,331,048	763,255	16,078	3,110,381
April	2,377,974	769,249	16,187	3,163,410

Steel Corporation Orders Again Show Shrinkage

A decrease of 314,524 tons in the unfilled bookings of the United States Steel Corp. is shown by the report covering April operations. Booking at the end of last month aggregated 8,741,882 tons, as against 9,056,404 tons on March 31. While improved transportation facilities and expanded operations of the mills were factors, the cancellation of further commercial orders also figured materially in the shrinkage. A year ago unfilled orders reached the record height of 12,183,083 tons.

The monthly record of unfilled orders with the respective changes is as follows:

Date	Total	Change, tonnage	Change, per cent
Apr. 30, 1918..	8,741,882	314,522—	3.47—
Mar. 31, 1918..	9,009,675	232,049—	2.49—
Feb. 28, 1918..	9,288,453	189,400—	1.99—
Jan. 31, 1918..	9,477,853	96,135+	1.02+
Dec. 31, 1917..	9,381,718	484,612+	5.44+
Nov. 30, 1917..	8,897,106	112,569—	1.24—
Oct. 31, 1917..	9,009,675	823,802—	8.37—
Sep. 30, 1917..	9,833,477	573,572—	5.51—
Aug. 31, 1917..	10,407,049	433,115—	4.16—
July 31, 1917..	10,844,164	539,123—	4.74—
June 30, 1917..	11,383,287	503,304—	4.24—
May 31, 1917..	11,886,591	296,492—	2.43—
Apr. 30, 1917..	12,183,083	471,439+	4.02+
Mar. 31, 1917..	11,711,644	134,947+	1.16+
Feb. 28, 1917..	11,576,697	102,643+	0.90+
Jan. 31, 1917..	11,474,054	73,232—	0.64—
Dec. 31, 1916..	11,547,286	488,744+	4.43+
Nov. 30, 1916..	11,058,542	1,043,282+	10.41+
Oct. 31, 1916..	10,015,260	492,676+	5.18+
Sep. 30, 1916..	9,522,584	137,133—	1.42—
Aug. 31, 1916..	9,660,357	66,765+	.69+
July 31, 1916..	9,593,592	46,866—	0.48—
June 30, 1916..	9,640,458	297,340—	3.09—
May 31, 1916..	9,937,798	108,247+	1.11+
Apr. 30, 1916..	9,829,551	498,550+	5.34+

Plans New Steel Capacity and Mills on Coast

The Pacific Coast Steel Co. soon is to commence improvements calling for an outlay of $300,000. A 28-inch rolling mill is included in the additions and alterations planned in the plant in South San Francisco. This later may be converted into a merchant mill for the rolling of angles, beams and channels. Open-hearth improvements include the addition of a 40-ton furnace and the converting of two 25-ton furnaces into 40-ton units. This will give the plant four 40-ton and one 35-ton open hearths which are expected to increase capacity 300 per cent. Further additions include the building of a six-mill sheet plant with a capacity of 3000 tons per month. Other additions planned by the directors include the construction of more open hearths, a large blooming mill and additional improvements which are expected to bring the output of the plant up to 20,000 tons monthly. Approximately 80 acres will be occupied by buildings and equipment when the work is completed. Casting, machining and erection of the fourteen 20-ton castings to be used in the new 28-inch mill is to be done independently of eastern foundries.

The 60-ton open hearth furnace of the Washington Steel & Iron Co. at Sedro Woolley, Wash., has been completed and will begin operations in May.

Priority Applications Deluge Board

Consumers Rush in to Get Preferential Accommodation on Steel—Mills Face Problem in Adjusting All Orders to Efficient Operations—Government Regulations Give Producers Some Latitude in Handling War Work

WASHINGTON, May 14.—The pledge of the steelmakers at the meeting in New York on April 26 to furnish 100 per cent production for war requirements already has resulted in almost quadrupling the number of applications from consumers to the priorities division of the war industries board for certificates to allow preferential production of steel. This means that steel manufacturers, already loaded down with priority orders, are in turn to be deluged with these certificates and that if mill practices are not adjusted to meet the influx, confusion may arise which may lead to serious consequences.

The sudden demand for priority certificates is regarded here as in keeping with the natural trend of events under the system employed by the war industries board to assure fulfillment of the requirements of the United States and its allies ahead of commercial orders. Government officials and representatives of the steel and other industries here almost to a man realize the burden the mills have to carry and feel that mill managers and company executives must employ their wits to successfully cope with the situation.

Must Use Their Conscience

The statement made by Judge E. H. Gary at the New York meeting, which was amplified by James B. Bonner, the industry's representative in Washington, and J. Leonard Replogle, director of steel supply for the government, that manufacturers must use their consciences and inquire if in doubt as to the proper course of procedure, has full government sanction. This is contained in paragraph No. 9 of the "Rules and Regulations Governing Priority," which says:

"The classification of an order simply means that it shall be given such precedence over orders of a lower classification as may be necessary (and only such as may be necessary) to insure delivery on the date specified in the order. It does not mean that work should cease on orders of a lower classification, or that the order should be completed and delivery made in advance of orders taking a lower classification if this is not necessary to effect delivery within the time specified. The one to whom a priority certificate is directed should make his own production plans, so as to get the maximum of efficiency out of his operations, making all deliveries at the time contracted for, if possible, and where this is not possible, giving precedence to the orders taking the highest classification."

Situation Fully Covered

This provision was made in the rules which were issued here on Jan. 1, 1918, with the full approval of Secretary of War Baker, Secretary of the Navy Daniels, and Chairman Hurley of the shipping board, with Secretary Baker also acting in his capacity as chairman of the council of national defense and Mr. Hurley as president of the Emergency Fleet corporation.

Judge Edwin B. Parker, chairman of the priorities division of the war industries board, cites the rule as fully covering the steel manufacturers position on priorities. In a statement to THE IRON TRADE REVIEW, Judge Parker said: "That provision, I believe, fully covers the situation for the steel men. The entire priority system was designed primarily to meet the government's requirements and the provision was inserted in the rules in order that manufacturers might adjust their operations to their own convenience as far as practicable, all the while remembering the war orders of the United States and her allies must be filled first. The provision is liberal and ample."

May Follow Coal Priority

The priorities division some time ago issued a list of industries recognized by the government as requiring fuel first ahead of all other industries. This was carried fully in THE IRON TRADE REVIEW, issue of April 18. While the announcement specifically stated the list was for guidance in supplying fuel—the fuel administration formally accepted the list as standard—it is felt here that priority of manufacture of steel and other materials should be confined to those special consumers even when priority certificates have not been issued. Some steel makers have stated privately that they found the list of great assistance. It is generally admitted, although the use of the term is in bad repute, that there really are essential and nonessential industries as far as capital, labor, materials, transportation, etc., are concerned in waging the great war.

Economy Board Shifted

Washington, May 14.—The work of the commercial economy board of the council of national defense, it is announced, has been transferred to the war industries board. A. W. Shaw, the chairman of the commercial economy board, will serve as chairman of the conservation division of the war industries board under Mr. Baruch. The plans for conservation which the commercial economy board has been carrying out during the last year in the clothing, garment, shoe, paint, agricultural implement, and other industries, and in various wholesale and retail trades will be continued and similar plans of conservation put into effect in other trades and industries.

By-Product Coke Capacity Grows Swiftly

WASHINGTON, May 14.—By-product coke plants in the United States today are capable of producing a maximum output of 30,903,180 tons. Reliable compilations just completed from reports received direct from by-product coke manufacturers show their productive capacity equal to that amount and that the maximum coal consumption of all the plants aggregates 41,983,300 tons. The capacities indicated are based on 8993 completed ovens.

The coke productive capacity of these ovens today is approximately 50

per cent greater than the actual production in the first quarter of 1918. Production figures compiled by the geological survey show that in January, February and March the by-product output was 5,200,000 tons, or at an annual rate of 20,000,000 tons. In the week ending April 27, by-product capacity was 534,000 tons and production 476,000 tons, or at annual rates of 28,000,000 and 25,000,000 tons respectively. That, however, was before the completion of three plants the annual capacities of which total more than 2,000,000 tons.

There now are under construction 3015 ovens whose coal consumption is expected to reach 18,591,345 tons for an output of 13,486,230 tons of coke. These ovens will raise the coal consumption maximum to 60,574,645 tons annually and the coke production capacity to 44,389,410 tons. The proportion production of toluol, ammonia, etc., will be increased.

The accompanying table shows the plants built and building, the number of ovens for each and their respective coal consumption and coke production capacities.

COMPLETED PLANTS

Owner or Operator	Location	No. of ovens	Kind of oven	Annual capacity, (net tons) Coal	Total coke
Allegheny By-Product Coke Co.	Glassport, Pa.	120	Otto	260,000	195,000
Cambria Steel Co.	Johnstown, Pa.	492	400 Otto, 92 Koppers	1,756,900	1,229,000
Carnegie Steel Co.	Farrell, Pa.	212	Otto	690,000	480,000
Semet-Solvay Co.	Dunbar, Pa.	110	Semet-Solvay	248,000	173,600
Bethlehem Steel Co., (Northampton)	South Bethlehem, Pa.	424	Koppers	2,400,000	1,920,000
Bethlehem Steel Co., (Lebanon)	Lebanon, Pa.	90	Semet-Solvay	387,000	278,600
Bethlehem Steel Co., (Steelton)	Steelton, Pa.	120	Semet-Solvay	516,000	371,500
Phila. Suburban Gas & Elect. Co.	Chester, Pa.	40	Semet-Solvay	125,000	87,500
Camden Coke Co.	Camden, N. J.	150	Otto	360,000	252,000
Empire Coke Co.	Geneva, N. Y.	46	Semet-Solvay	146,000	102,200
Lackawanna Iron & Steel Co.	Buffalo	469	188 Otto-281 Rothberg.	1,350,000	972,000
The Solvay Process Co.	Syracuse, N. Y.	40	Semet-Solvay	65,000	45,500
New England Fuel & Transportation Co.	Everett, Mass.	400	Otto	780,000	600,000
Bethlehem Steel Co., (Maryland)	Sparrows Point, Md.	120	Koppers	730,000	525,600
Bethlehem Steel Co., (Colebrooke)	Lebanon, Pa.	228	Otto	500,000	360,000
National Tube Co.	Benwood, W. Va.	120	Semet-Solvay	270,000	189,000
LaClede Gas Light Co.	St. Louis	56	Koppers	320,000	240,000
Minnesota Steel Co.	Duluth	90	Koppers	510,000	375,000
Zenith Furnace Co.	Duluth	80	Otto	200,000	144,000
Cleveland Furnace Co.	Cleveland	100	Semet-Solvay	540,000	350,000
Republic Iron & Steel Co.	Youngstown, O.	143	Koppers	1,020,000	744,600
Youngstown Sheet & Tube Co.	Youngstown, O.	204	Koppers	1,300,000	949,000
Toledo Furnace Co.	Toledo, O.	94	Koppers	560,000	408,800
United Furnace Co.	Canton, O.	47	Koppers	280,000	204,400
Hamilton Otto Coke Co.	Hamilton, O.	100	Otto	240,000	168,000
Milwaukee Coke & Gas Co.	Milwaukee	160	Semet-Solvay	1,004,000	800,000
Northwestern Iron Co.	Mayville, Wis.	72	Otto	320,000	230,400
Citizens Gas Co. (1)	Indianapolis	41	Semet-Solvay	262,000	196,500
Citizens Gas Co. (2)	Indianapolis	100	Otto	338,000	253,500
Illinois Steel Co.	Gary, Ind.	700	Koppers	4,475,000	3,580,000
Seattle Lighting Co.	Seattle, Wash.	20	Klonne	36,000	26,000
River Furnace Co.	Cleveland	204	Koppers	1,300,000	949,000
Indiana Coke & Gas Co.	Terre Haute, Ind.	30	Gas-Machinery	150,000	93,000
Central Indiana Gas Co.	Muncie, Ind.	22	Klonne	40,000	28,000
Inland Steel Co.	Indiana Harbor, Ind.	130	Koppers	890,000	610,000
By-Products Coke Corp.	South Chicago, Ill.	280	Semet-Solvay	1,300,000	975,000
North Shore Gas Co.	Waukegan, Ill.	13	Semet-Solvay	100,000	65,000
Coal Products Mfg. Co.	Joliet, Ill.	53	35 Koppers-18 Wilputc	340,000	238,000
Illinois Steel Co.	Joliet, Ill.	280	Koppers	1,500,000	1,200,000
Semet-Solvay Co.	Detroit	215	Semet-Solvay	1,343,300	1,009,000
Michigan Alkali Co.	Wyandotte, Mich.	54	Otto	217,000	149,000
Kentucky Solvay Coke Co.	Ashland, Ky.	108	Semet-Solvay	800,000	600,000
Woodward Iron Co.	Woodward, Ala.	230	170 Koppers-60 Wilputc	1,255,000	954,200
Tennessee Coal, Iron & Railroad Co.	Fairfield, Ala.	280	Koppers	1,781,000	1,192,600
Semet-Solvay Co.	Ensley, Ala.	240	Semet-Solvay	699,000	479,600
Central Iron & Coal Co.	Holt, Ala.	60	Semet-Solvay	290,000	200,000
Semet-Solvay Co.	Buffalo	60	Semet-Solvay	386,000	289,500
LaBelle Iron Works	Follansbee, W. Va.	94	Koppers	610,000	400,000
Brier Hill Steel Co.	Youngstown, O.	84	Koppers	630,000	453,000
Dover By-Products Coke Co.	Canal Dover, O.	24	Roberts	220,000	150,000
Gulf States Steel Co.	Alabama City, Ala.	37	Koppers	230,000	174,800
The Portsmouth Solvay Coke Co.	Portsmouth, O.	108	Semet-Solvay	770,000	559,900
Chattanooga Coke & Gas Co.	Chattanooga, Tenn.	24	Semet-Solvay	210,000	150,000
Algoma Steel Co.	Sault Ste. Marie, Ont.	110	Koppers	681,000	510,700
Dominion Iron & Steel Co.	Sydney, N. S.	520	Otto	1,664,000	1,198,080
Nova Scotia Steel & Coal Co.	Sydney Mines, N. S.	190	30 Bauer-160 Bernard.	159,000	110,000
Seaboard By-Product Coke Co.	Jersey City, N. J.	110	Koppers	800,000	600,000
Minnesota By-Products Coke Co.	St. Paul	65	Koppers	380,000	273,600
American Steel & Wire Co.	Cleveland	180	Koppers	1,150,000	839,500
Total completed ovens		8,993		41,983,300	30,903,180

PLANTS BUILDING

Owner or Operator	Location	No. of ovens	Kind of oven	Annual capacity, (net tons) Coal	Total coke
Carnegie Steel Co.	Clairton, Pa.	1,280	Koppers	7,920,000	5,702,000
Northwestern Iron Co.	Mayville, Wis.	36	Otto	197,000	147,000
Bethlehem Steel Co.	Sparrows Point, Md.	240	Koppers	1,500,000	1,125,000
National Tube Co.	Lorain, O.	208	Koppers	1,320,000	963,600
Colorado Fuel & Iron Co.	Pueblo, Colo.	120	Koppers	720,000	518,400
Bethlehem Steel Co., (Steelton)	Steelton, Pa.	60	Koppers	375,000	270,000
The Ironton Solvay Coke Co.	Ironton, O.	60	Semet-Solvay	432,000	311,000
Ford Motor Co.	Detroit	120	Semet-Solvay	864,000	622,000
By-Products Coke Corp.	Indiana Harbor, Ind.	120	Semet-Solvay	864,000	622,000
Dominion Iron & Steel Co.	Sydney, N. S.	120	Koppers	720,000	518,400
Youngstown Sheet & Tube Co.	Youngstown, O.	102	Koppers	650,000	474,500
Steel Co. of Canada	Hamilton, Ont.	80	Wilputc	465,000	331,000
Algoma Steel Co.	Saulte Ste. Marie, Ont.	25	Wilputc	142,500	108,500
Providence Gas Co.	Providence, R. I.	40	Koppers	240,000	172,800
Seaboard By-Product Coke Co.	Jersey City, N. J.	55	Koppers	340,500	255,350
Indiana Coke & Gas Co.	Terre Haute, Ind.	15	Koppers	93,750	67,500
Tennessee Coal, Iron & Railroad Co.	Fairfield, Ala.	154	Koppers	877,800	668,360
Cambria Steel Co.	Johnstown, Pa.	180	Otto	869,795	608,820
Total ovens building		3,015		18,591,345	13,486,230
Total ovens built		8,993		41,983,300	30,903,180
Grand total for all plants		12,008		60,574,645	44,389,410

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

GEORGE H. CHARLS has resigned as vice president and sales manager of the American Rolling Mill Co., Middletown, O., and shortly will assume an important executive connection with the Berger Mfg. Co., Canton, O., manufacturer of sheet metal products. He has disposed of his stock holdings with the American Rolling Mill Co., and has acquired a substantial interest in the Berger company. Ed. A. Langenbach, president and general manager of the Berger company announces that while Mr. Charls' official title had not yet been determined, in a large measure he will assume the responsibility and directive powers of the president himself. By close application and marked ability, Mr. Charls had risen from the bottom of the ladder to a leading executive position in the American Rolling Mill Co. organization, within a period of 17 years. Upon leaving the University of Cincinnati in his junior year, he accepted a position with the Central Union Telephone Co., Indianapolis. One year later, he became affiliated with the American Rolling Mill Co., as clerk in the galvanizing department. He was promoted to a clerical position in the accounting department in the main office about two years later, where he remained about the same length of time when he was transferred to the sales department as assistant to Secretary R. C. Phillips. He gradually worked himself up to the position of sales manager and in October, 1914, he was elected vice president in charge of the sales division. He organized in 1909, the Dixie Culvert & Metal Co., Atlanta, Ga., of which he served as president. He also was one of the organizers of the Tennessee Metal Culvert Co., Nashville, and of the Colorado Ingot Iron Pipe Co., Denver. He is best known in connection with the introduction and sale of American ingot iron.

A. B. Ehst was recently appointed controller of the Baldwin Locomotive Works, Philadelphia, and Charles Riddell was made assistant secretary.

C. J. Quinn recently resigned as manager of the La Point Foundry Co., Schlesingerville, Wis., and H. L. Regenetter is temporarily in charge.

Ambrose Swasey of the Warner & Swasey Co., Cleveland, was succeeded by Charles E. Adams as president of the Cleveland Y. M. C. A. Mr. Adams was formerly vice president.

W. J. Eldredge has been made manager of the San Francisco office recently opened in the Merchants Exchange building by the Machinery & Metal Sales Co., New York.

J. L. Ackerson, formerly assistant to Charles Piez, vice president of

GEORGE H. CHARLS

the Emergency Fleet corporation, has been made assistant to Director General Charles M. Schwab.

S. W. Platt has been appointed manager of the Pittsburgh office in the Park building of Luria Bros. & Co., dealers in iron and steel scrap, Reading, Pa.

August Hechscher, who for a number of years has been a large stockholder in the Central Foundry Co., New York, resigned his position on the board of directors recently and has been succeeded by R. A. Fairburn.

Daniel Hurley resigned on May 1 as superintendent of the Cooper Machine shops, Bennington, Vt. On May 1, 32 years ago, he entered the employ of the late Charles Cooper, founder of the business.

Charles C. Alvord accepted a position in the hull scientific section of the Lake Torpedo Boat Co., Bridgeport, Conn., upon being graduated with the class of 1918 from the Worcester Polytechnic institute, Worcester, Mass.

Thomas E. Griffin, who for nine years has been connected with the Dickinson Mfg. Co., Springfield, Mass., has been made manager of the plant which has been taken over by the International Insulation Corp., New York.

Walter H. Allen has been made efficiency engineer of the Graton & Knight Mfg. Co., Worcester, Mass., machinery belting. He formerly was secretary of the New England Steel Roofing Co., that city.

Harry G. Stoddard, vice president and general manager of the Wyman & Gordon Co., Worcester, Mass., and Cleveland, drop forgings, has been named Worcester manager of the Red Cross campaign for the week of May 20.

A. Merritt Taylor has been made director of housing and transportation of shipworkers throughout the country under Charles M. Schwab, director general of the Emergency Fleet corporation. Mr. Taylor was formerly chief of the Philadelphia department of transit.

Charles M. Schwab has been elected president of the Oratorial society of New York to succeed Andrew Carnegie. Mr. Carnegie has been president for over 30 years and explains that his advancing years makes it necessary for him to retire.

Dr. J. Bennett Hill, who has charge of the chemical laboratory of the Barrett Co., will deliver an illustrated lecture on a new method for the determination of toluol at the May meeting of the Philadelphia section of the American Chemical society.

M. L. Lothrop who has been in charge of the steel and tube department of the Timken Roller Bearing Co., Canton, O., was recently made assistant factory manager. He likewise has been chief metallurgist of the Timken company for the past seven years.

Maj. Harold J. Riley, who was active in the organization of the Sanford Riley Stoker Co., Ltd., Worcester, Mass., and Detroit, of which his brother, R. Sanford Riley, is president, has been promoted to the rank of lieutenant colonel. He is with the

twenty-seventh city of Winnipeg battalion, Canadian overseas expeditionary force, is not yet 30 years old and was given the D. S. O. metal for gallant service at Vimy Ridge. He was wounded in action two years ago.

Thomas R. Brown, engineer, Pittsburgh, was recently appointed administrative engineer for the fuel administration. C. P. Billings was made special staff assistant. These appointments are in connection with the program for fuel conservation through economies in operation methods.

Capt. H. Bryant, O. D. N. A., who formerly was in the scrap iron and steel business in Milwaukee, under the firm name of H. Bryant, Inc., has communicated with Chicago friends from the French front. He is in charge of the repairing of ordnance and small arms, having seen considerable service.

Clifford S. Anderson and M. A. Williamson of the Norton Co., Worcester, Mass., manufacturer of grinding wheels have gone to South America, where the company is conducting an investigation in the Guianas. Mr. Williamson, a chemist, expects to locate there permanently.

A. Warren Wells, who for 10 years has been assistant superintendent of the lens plant of the American Optical Co., Southbridge, Mass., resigned recently to become president of the Optical Lens Mfg. Co., recently incorporated. Headquarters are in Boston and the plant is located in Southbridge, Mass.

J. H. Riordan is now connected with the sales organization of the Cleveland Milling Machine Co., Cleveland, having recently resigned as sales engineer of the Grant Lees Gear Co., Cleveland. He formerly represented the Fellows Gear Shaper Co., Springfield, Vt., in the central states.

W. F. Wagner who recently resigned his connection with William Jessop & Son after 52 years of service, has been made sales manager of the Seaport Steel Co., with offices at 217 Broadway, New York. The company specializes in high speed, alloy and carbon tool steels and carbons, sheet steel and forgings.

Archibald R. Lemieux has become vice president and general manager of the Worcester Mfg. Co., Worcester, Mass., upon his resignation as head of the Ansonia Mfg. Co., Ansonia, Conn., maker of brass goods. He formerly lived in Worcester, when serving as foreman of the Reed & Curtis Machine Screw Co., for four years.

Evan F. Jones, treasurer and general manager of the Morgan Spring Co., Worcester, Mass., recently resigned as president of the Norcross Bros. Co., general contractor of that city, remaining as director and stockholder. Edward J. Cross, president and treasurer of the E. J. Cross Co., Worcester, general contractor, succeeds him.

Stuart B. Marshall, who at one time was manager of the American Manganese Mfg. Co., Dunbar, Pa., is now a consulting engineer, chemist and metallurgist on blast furnaces, coke ovens, foundries, ferroalloys, ores, etc., at Roanoke, Va. Mr. Marshall was formerly general superintendent of the Aluminum Co. of America in North Carolina.

Charles Leonard, who was graduated from the Worcester Polytechnic institute, Worcester, Mass., in 1917, where he took a special course in safety engineering, has become safety engineer of the Dupont powder works, Wilmington, Del. He resigned as a director of the vocational school at Holyoke, Mass., to accept the appointment.

William Griscom Coxe has been made supervisor of ship construction in the Delaware river district by Director General Charles M. Schwab. Mr. Coxe is a shipbuilding expert. After having practiced his profession in England and Germany, he became associated with Wm. Cramp & Sons Ship & Engine Building Co., Philadelphia, and later became president of Harlan & Hollingsworth Corp.

Warren B. Ryther, 512 Ellicott square, Buffalo, was recently appointed manager of the Buffalo office of the Miner-Morse Corp., Erie, Pa., high-speed steel, alloy steels, sheets, shapes, etc. Pierre A. Miner, president of the corporation has been spending a great deal of time in Washington in connection with the alloy steel requirements of the government.

T. H. McKenney of the Illinois Steel Co., Chicago, addressed the Chicago Safety Council and the accident prevention committee of the Illinois Manufacturers' association at a joint meeting and dinner at the Hotel La Salle, Chicago, April 30, on accident prevention. Other speakers were H. F. Perkins of the International Harvester Co., and H. E. Myles, chairman of industrial training of the council of national defense.

Victor E. Edwards has been granted a leave of absence for duration of war by the Morgan Construction Co., Worcester, Mass., of which he was vice president. On March 18, he became consulting engineer for the ordnance department at the proving grounds, Aberdeen, Md., but declined to accept a commission. He now has been commissioned a major in the ordnance reserve corps of the army.

C. A. Miller, assistant purchasing agent for the Carnegie Steel Co., Pittsburgh, succeeds J. M. Taylor who recently resigned after 25 years of service.

S. B. Reynolds, who for the past 17 years has been connected with the Brown & Sharpe Mfg. Co., Providence, R. I., was recently appointed New York representative at 50 Church street for William E. Duff, York, Pa., machinery and mills supplies.

C. W. Hancock, Cleveland, well known in the middle west machinery trade, will succeed P. J. Hopkins as eastern representative at 50 Church street, New York, of the Cleveland Punch & Shear Works Co., Cleveland. Mr. Hopkins has held this position for several years and resigned recently to accept an important position with the Fore River Shipbuilding Corp., Quincy, Mass.

S. E. Chadsey, assistant to the general superintendent of the Massey-Harris Co.'s plant at Toronto, Ont., has been made general manager of the agricultural implement plant at Brantford, Ont., to succeed Franklin Grobb, who has retired because of ill health. The latter continues his connection with the company in an advisory capacity only. R. D. Johnson has retired as superintendent of the Brantford factory and is succeeded by John W. Dunn.

Prof. Samuel J. Barnett of the department of physics, Ohio State University, has been awarded the Comstock prize by the National Academy of Sciences, in recognition of his successful research work in magnetism by rotation. This prize, offered once in five years, has been awarded but once before, to Prof. R. A. Millikan of the University of Chicago and consists of a cash award of $1500 together with the accompanying distinction in scientific circles.

J. F. Webb has become affiliated with the the E. J. Woodison Co., Detroit, which recently absorbed his company, the J. F. Webb Mfg. & Supply Co., Davenport, Iowa, manufacturer of air squeezer molding machines. Mr. Webb will have charge of the Woodison company's molding machine department. The Woodison company now is manufacturing electric jar-ramming, pattern drawing and roll-over molding machines, and is now designing a coremaking machine which will have a large capacity for the production of flat cores.

Iron and Steel Men in War Machine

Edward N. Hurley, Chairman, United States Shipping Board

EDWARD NASH HURLEY'S contribution to the winning of the war is not easy to overestimate. That it is more than large, there can be no doubt. Ships form not alone the foundation for the successful prosecution of the war but a bulwark of defense for every branch of warfare. Everything relates to, is dependent upon and revolves about ships. And with ships, as all know, Mr. Hurley has had much to do. Due to his efforts, plants now are ready to turn out ships in quantity. Launchings now average over one a day. He has laid the basis for the production possibilities under the commencing regime of Charles M. Schwab, recently appointed director general of shipping. As chairman of the United States shipping board and president of the Emergency Fleet corporation, Mr. Hurley for months has occupied the foreground of public interest and patriotic feeling since the extreme importance of the ship program everywhere has been appreciated. How Mr Hurley's achievements are regarded by those to whom shipping is a familiar matter and by business men in general was evidenced at the recent foreign trade convention in Cincinnati. An officer of the government, praising the ability of Mr. Mr. Schwab and the part the Bethlehem steelmaster is to play in the carrying out of the ship program, invoked great applause. This cheering only was exceeded upon his reminding his hearers that when the shipping program "goes over the top", none should forget the man who made it all possible, the man who prepared the groundwork and worked against terrific odds, Edward Nash Hurley.

In the three years which have elapsed since President Wilson appointed Mr. Hurley chairman of the federal trade commission, the latter has earned for himself the name of "Hurry Up" Hurley in Washington circles. Incidentally he was the man who drove the first rivet to be driven in a ship by compressed air. His rise in 15 years from an obscure position running a switch engine into Chicago at $35 a month to millionairedom was made possible by his genius exercised in the invention of pneumatic tools. After several railway jobs, he became deputy collector of customs in Chicago. On Jan. 1, 1890, he became chief engineer of the Cook county insane asylum. He had long been interested in the application of the pneumatic principle to tools and his several inventions included a pneumatic bell ringer, brake, sanders, hammers, etc. With two machinists he commenced business in a barn. Three months later the first pneumatic pouring machine was placed on the market and Hurley's career of success was assured. On April 1, 1898, he opened the office of the Standard Pnuematic Tool Co., Chicago, with a capital of $50,000. Three years later he sold out to its competitor at a price which made him a millionaire. He was born in Galesburgh, Ill., July 31, 1864, and in that town received his first shipping experience. It was in a tub which he sailed down Cedar Fork creek, running under the town's streets.

EDWARD NASH HURLEY *Copyright Harris & Ewing*

Iron and Steel Financial News

Up-to-the-Minute Fact and Comment Collected and Sifted For Busy Readers

McAdoo Says New Revenue Bill Will Pass

KEEN interest is being manifested by business men generally in the demand of Secretary McAdoo for the enactment of a new war tax bill at this session of congress. Proposed immediately after the third Liberty loan has been heavily oversubscribed and when business houses are planning to meet the federal taxes due June 15, it is thought by many that the proposal is somewhat inopportune. Many large corporations and business interests have obeyed the injunction of Internal Revenue Commissioner Roper to take advantage of the government's interest offer of 25 cents a month on every $100 in taxes paid in advance, applicable to May 15, and thus relieve a congestion in the revenue offices the middle of June. In one day recently $115,000,000 was received from this source alone and in the first 10 days of the month approximately $227,000,000 was on hand from income and excess profits taxes, as compared with a total of only $412,000,000 in the last 10 months. By June 15, it is expected this total will be smaller , an amount greatly in excess of $3,000,000,000 or about $1,000,000,000 more than was originally anticipated from this source. Nothwithstanding this fact and that the last loan brought in an extra billion, Secretary McAdoo apparently proposes to push the new tax measure.

Measure Will Be Strenuous

When submitted to congress, the bill, it is said, will go the limit in taxing war profits. It will establish definite profits and all in excess of that mark will go to the government. It is understood that the President has told congressional leaders who oppose additional tax legislation at present that the measure must be passed now. Secretary McAdoo is prepared to prove to Senator Simmons, senate finance committee chairman ,and Chairman Kitchin of the house ways and means committee, that the measure is imperative. Representative Kitchin stated in the house recently that estimates for the next fiscal year would reach at least $31,000,000,000, while other estimates supplied later place the expenditures at $33,500,000,000 as follows:

Ordinary expenses	$2,000,000,000
Fortifications	6,000,000,000
Sundry civil and shipping	3,000,000,000
Naval	1,500,000,000
Loans to the allies	6,000,000,000
Military	15,000,000,000
Total	$33,500,000,000

Representative Joseph W. Fordney, ranking Republican member of the ways and means committee, one of the opposers, recalled the percentages raised by direct taxes in different countries engaged in the war. He said the United States had raised 35 per cent of its revenues by direct taxes, while Great Britain had obtained only 25 per cent and Canada only 18.5 per cent in this way. He insisted that the rest of the money necessary for the conduct of the war be obtained from loans, and advocated pause until next winter before inaugurating another tax. Representative John M. Garner of Texas agreed that sufficient taxes had been levied for the present and that another revenue bill would seriously affect the morale of the nation and cause possibly critical confusion in the business world.

War Expenses Increase Rapidly

That we are quickly overtaking Great Britain in war expenditures is shown by comparative figures recently issued by the Alexander Hamilton institute. During the fiscal year ending June 30, 1918, the United States will have disbursed upwards of $12,000,000,000, while Great Britain in the year ended March 31, disbursed $13,500,000,000. However, since loans to allies were twice as great as those to Great Britain, the national expenses of the United States are only $7,000,000,000 for the year as against $11,000,000,000 for Great Britain. The comparative war budget for the two countries follows:

	Great Britain fiscal year ending Mar. 31, 1918	United States fiscal year ending June 30, 1918
Total disbursement, billions.	$13.5	$12.0
Loans to allies, billions....	2.5	5.0
Net nat'l exp., billions.....	11.0	7.0
Paid by taxation, billions..	3.5	4.0
Borrowed for net expenses (not including loans to allies) billions	7.5	3.0
Ratio, taxes to net exp....	32%	57%
Per capita taxes, last 12 months	$77.00	$40.00
Per capita loans to allies, 12 months	55.00	50.00
Per capita borrowings (less loans)	170.00	30.00

New Finance Corporation Ready For Business

Washington, May 14.—The war finance corporation is expected to get on the job this week. The senate last Thursday completed its confirmation of the four directors of the corporation and the seven members of the corporation's capital issues committee. As soon as the oaths of office have been taken, the board of directors, of which Secretary McAdoo is a member exofficio, and the committee will complete their respective organizations and the new machinery which is to keep the financial wheels of war industries grinding, will be set in motion.

The board and the committee each will be constituted as Secretary McAdoo, with the approval of the President, has desired, with the exception of Allen B. Forbes, who declined one of the directorships. In his place was nominated, and confirmed, C. M. Leonard of Chicago, president of the Leonard Construction Co. The other directors are W. P. G. Harding, Eugene Meyer Jr., and Angus W. McLean. Members of the capital issues committee are Charles S. Hamlin, John Skelton Williams, Frederic A. Delano, James B. Brown, John S. Drum, Frederick H. Goff and Henry C. Flower.

The capital issues committee, authorized in the act creating the cor-

poration, will succeed a similar committee now acting voluntarily for the federal reserve board. This committee has been particularly active since last January. Last week, practically the last full week of its existence, the reserve board's committee passed upon 37 applications for approval of issues, municipal, public utility and industrial, larger than $100,000, the minimum provided for in the war finance corporation act.

Of last week's considerations, issues aggregating $4,811,000 were disapproved. In addition to this, the committee induced postponement of issues aggregating $4,990,000 until after the war. Of the total submitted, $6,777,084 were to meet expiring obligations. The $15,899,193 approved is nearly $1,700,000 greater than the amount of new issues offered in the market in the corresponding week last year.

First Quarter Net Drops

A slight decrease in earnings for the initial quarter of 1918, as compared with the same period a year ago, is shown by the recent report of the American Steel Foundries. Income for the three months ended March 31, 1918, totals $2,102,020 as against $3,179,978 in the same period in 1917. Payments of notes and redemption of outstanding bonds in 1917 made the charges before dividends in the first quarter much smaller than the corresponding period last year. The sum reserved for federal taxes was $548,000. Earnings on 171,840 shares were equivalent to $8.77 per share as against $13.97 in the first quarter 1917. The comparative income account for the first three months follows:

	1918	1917
Net earnings	$2,059,850	$3,104,814
Other income	42,170	75,164
Total income	2,102,020	3,179,978
Charges	46,427	778,576
Taxes	548,000	
Surp. after charges	$1,507,593	$2,401,402

Harvester Co. Reorganized

Ample finances to continue the operation of the Independent Harvester Co., Plano, Ill., which went into a receiver's hands on Dec. 11, 1917, at maximum capacity in the manufacture of agricultural machinery, implements, tractors, etc., have accrued through the complete reorganization by Milwaukee capitalists. The new company is known as the Independent Harvester Co., Ltd., and is organized under the laws of the state of Delaware, with a capital stock of $3,500,000, $1,000,000 being preferred and the remainder common. The company has acquired all assets and assumed all approved liabilities of the old concern. All the old stockholders will be given an opportunity to take new stock while creditors will all be paid off by the new company.

Grant Fitch, vice president of the National Exchange bank, Milwaukee, represented the Milwaukee syndicate in the purchase. With him are associated Lawrence Fitch, an officer and director in numerous large industries of Milwaukee and Wisconsin; Albert J. Earling, chairman of the Chicago, Milwaukee & St. Paul railway, and others.

Financial Crop Ends

The Northwest Harvester Co. and the Holt Mfg. Co., Spokane, are to turn out $3,000,000 worth of caterpillar tractors and combined harvesters this season, according to Ben C. Holt, president of the former.

* * *

The name of the Theisen-Braithwaite Co., Port Huron, Mich., has been changed to the Great Lakes Foundry Co. Its capital has been increased to $50,000 and new equipment has been installed.

* * *

The Southern California Iron & Steel Co., of Los Angeles, has been granted authority by the state corporation department to issue a stock dividend of $237,500 to its stockholders. The dividend represents accumulated and undistributed profits.

* * *

The American Equipment Co. of Bucyrus, O., has sold to the American Steel & Machine Co. of Chicago, property at Watt avenue and Lake Calumet, Chicago, which it recently bought from the Illinois Brick Co. The property will be utilized for a plant to manufacture munitions.

* * *

The estate of W. I. Babcock and Babcock & Penton, consulting naval architects and engineers, 120 Broadway, New York, and Penton building, Cleveland, announces the discontinuance of their business as of May 1, 1918. Communications may be addressed to H. Penton, Penton building, Cleveland.

* * *

The New Haven Rivet Co., New Haven, Conn., has been authorized to increase its capital from $5000 to $80,000. Repairs to the present plant will be made and considerable new machinery installed. The company's line of manufacture includes rivets of all kinds and sizes, machine screws and wood screws.

* * *

The Walcott Lathe Co., Jackson, Mich., has increased its capital stock from $700,000 to $1,500,000. Other increases in capital stock made recently include: The Belknap Hardware & Mfg. Co., Louisville, Ky., $4,000,000 to $5,000,000; the Blashill Wire Machine Co., Montreal, Que., $48,000 to $100,000; and the Louisville Axe & Tool Co., Louisville, Ky., to $40,000.

Government Buying

More Prominent in Coal Tar Products —Sulphate Demand Heavy

New York, May 11.—Present indications are that the government will take practically the entire production of sulphate of ammonia over the next few months. Producers now are awaiting word with regard to large deliveries to be made to the new government nitrate plant at Baltimore. Sales to the government are being made on the basis of $4.50 per 100 pounds at producers' plants. In the outside market, spot continues to command $5.55 to $5.60 per 100 pounds at tidewater, but this level is largely nominal. It has become definitely apparent that producers will be unable, for some time, to renew yearly contracts with regular customers.

The toluol committee of the war industries board has granted additional permits to commercial users for May delivery. The committee is exercising great caution in acting upon applications and in many cases the quantities requested have been cut down materially. Prices on this commercial business range from $1.75 to $2 per gallon. The government continues to pay $1.50 per gallon.

The government is taking some benzol, but not in quantity. It is expcted the government ultimately will be a large buyer. Demand is rather slow and the tone is easy. Pure benzol continues at 28 to 35 cents per gallon.

No action has developed on the inquiry of the navy department for large quantities of solvent naphtha. Other demand continues fairly active and supplies are comparatively scarce. Spot may be quoted at 18 to 25 cents per gallon, and contract at 18 to 22 cents.

Coke Oven By-Products

Spot

Per Gallon at Producers Plant	
Pure benzol	$0.28 to .35
Toluol (on sales sanctioned by government)	1.75 to 2.00
Solvent naphtha	.18 to .25
Per Pound at Producers Plant	
Phenol	$0.52 to .55
Naphthalin (nominal)	.10 to .12
Per 100 Pounds at Seaboard	
Sulphate of ammonia	$5.55 to 5.60

Contract

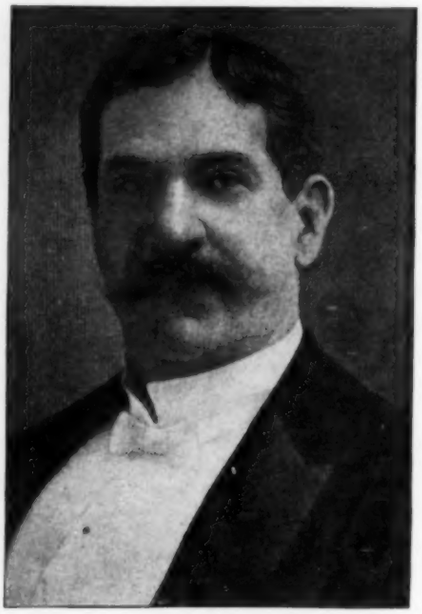
Pure benzol	$0.28 to .35
Toluol	no market
Solvent naphtha	.18 to .22
Per Pound at Producers Plant	
Phenol nominal.	
Per 100 Pounds at Seaboard	
Sulphate of ammonia	nominal

Obituaries

COL. JOHN GORDON BATTELLE, who retired as president of the Columbus Iron & Steel Co., Columbus, O., about a year ago, died at his home in that city, May 10, after a brief attack of bronchial pneumonia. His connection with the iron and steel industry had extended over nearly a half century. In that time he had gained for himself a position of much prominence. Born at Clarksburg, Va., May 12, 1845, he obtained his education at a Fairmont, Va., academy and at the Lindsay institution, Wheeling, W. Va. Upon his graduation he obtained a position as clerk in the treasury department at Washington, where he remained six months. For a while he worked in the United States quartermaster's department at Wheeling and then accepted a position as bookkeeper for J. L. Hobbs & Co., of that city. This marked his entry into the iron and steel business. A rapid rise, due to his energy and ability, made him secretary and general manager of the Wheeling Rolling Mill Co. at the age of 21. Mr. Battelle then located in Memphis, Tenn., continuing in the rolling mill industry there for several years. In March, 1883, he resigned and moved to Cincinnati, O., to take the management of the Cincinnati Corrugating Co. This corporation then moved to Piqua, O., where the Piqua Rolling Mill Co. was organized, of which Mr. Battelle was made president. He also filled the post of general manager of both companies which were ultimately sold to the American Sheet Steel Co. He served in those capacities for about 10 years and having acquired some of the stock of the Columbus Iron & Steel Co., he was elected to the presidency. He remained at the head until his company was consolidated with the American Rolling Mills Co., Middletown, O., final plans for which were arranged last May. Then he retired. Col. Battelle received his commission as colonel in the Ohio National Guard from the late Governor Nash. He was an aide on the governor's official staff and was one of the Ohio commissioners to the Panama-Pacific International Exposition in San Francisco. He always took a keen interest in Republican politics, and was especially active in his support of the principles of a protective tariff. At one time he was a director of the Inland Steel Co., and of the Rising Sun Mining Co.

James May, who for many years was foreman for the Continental Iron Works, New York, died at his home in Brooklyn recently, aged 64.

Henry A. Purdy, retired, who at one time owned and operated a foundry in



COL. JOHN G. BATTELLE

Greenpoint, Brooklyn, N. Y., died at his home in Brooklyn, May 8.

Edward Jessup Stewart, organizer, president and treasurer of the United Metal Seal Co., South Boston, died May 8 at his home in Brookline, Mass.

William L. Collamore, formerly chief engineer of the Warren Mfg. Co., Warren, R. I., and inventor of the Collamore governor for steam engines, died at his home there, May 1, aged 80.

De Witt C. Prescott, aged 77, inventor of the Prescott steam feed, died May 4 at his home in Chicago. He was the founder of the Marinette Iron Works Co., Duluth, but retired from active business several years ago.

George Dunham, inventor of nut-making machinery, died suddenly at his home in Unionville, Conn., May 9, aged 88. He organized the Dunham Nut Co., which was later sold to the Garland Nut & Rivet Co., New Castle, Pa., when he retired.

Charles Jenkins, aged 74, who for 24 years has been actively identified with Jenkins Bros., Boston, valve manufacturers, died at his summer home in Winthrop, Mass., May 1. His father, Nathaniel Jenkins, was the patentee and maker of the Jenkins valve.

John M. Toppin, formerly manager of the Rhodes Mfg. Co., Hartford, Conn., special machinery, died in Pittsfield, Mass., May 10, aged 25. As consulting engineer he was a member of the American society of mechanical engineers and for six years was connected with the General Electric Co.

John J. Cummings, president of the McGuire-Cummings Mfg. Co., Chicago, railway cars and equipment, died May 4 after a 10-day illness, aged 53. He was chairman of the Chicago & West Town Railway Co.'s board of directors and was likewise chairman of a district exemption board.

C. A. Francis, who for 25 years was superintendent of the Studebaker Bros. Mfg. Co., South Bend, Ind., and at the time of his death, affiliated with the Packard Motor Car Co., Detroit, died recently in the latter city. He was a pioneer designer of automobile bodies.

John S. Hunter, mechanical engineer, who for six years has been secretary of the Terry Steam Turbine Co., Hartford, Conn., died at his home there, May 7, following a two-weeks' illness, aged 84. He was the organizer and president of the Hartford Foundry & Machine Co., where he remained seven years. Later he was affiliated with the Henry R. Worthington Co., New York.

Arthur L. Clark, president and treasurer of the Winsted Edge Tool Works, Winsted, Conn., maker of chisels and draw knives and treasurer of the Winsted Mfg. Co., that city, maker of scythes, hay and corn knives, died in Litchfield county hospital, Winchester, Conn., May 3, following an operation at the age of 60. He was president of the Hurlburt National bank, Winsted, and a director of many important industries in the town. He had served in both branches of the state legislature.

Steel Exporting Buffeted by War

Complicated Procedure Now Necessary Before Shipment Can Be Made Due to Licensing System, Ship Shortage, Railroad Permits and Other Difficulties —Tremendous Tonnage of Unfilled Foreign Demands Piling Up

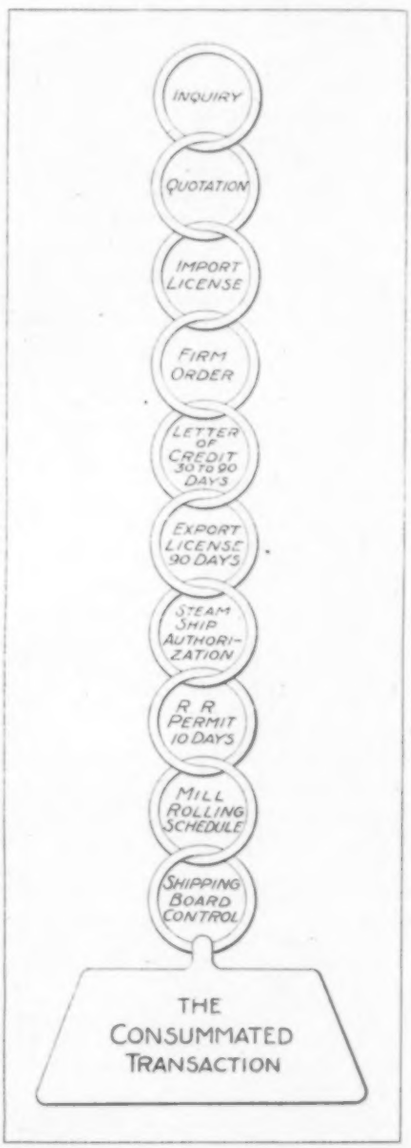
BY G. F. CREVELING

EXPORT merchandizing of steel products used to be a business. Now it is a science, in which experience, good judgment and good luck are among the main constituents. Probably no industry in the United States today is being conducted under as many handicaps as our overseas trade in steel, due to conditions arising from the world shortage of ships, scarcity of materials, diplomatic negotiations, a crippled railroad system and various other difficulties.

These untoward conditions have created a routine through which the export order must pass on its way from the original inquiry to the delivery of goods aboard ship that is so complex and changing that the export seller must be on the job every day and every minute. And he must be lucky, too, no matter what his experience, or the deal may fall through in any one of several stages. The general routine of the ordinary export transaction is elaborate.

Many Preliminaries Necessary

After the merchant receives the original inquiry from abroad, he shops around for as low a price as possible, then cables his quotation, subject to granting of export license, and naming approximate delivery and other terms. If these are accepted, it is then up to the customer to arrange his letter of credit with a bank in this country, which usually runs from 30 to 90 days, first arranging with his government for an import license, if he is located in a country requiring such a license. After the credit is established, the merchant applies to the war trade board for an export license, which expires in 90 days. This done, he applies to the steamship company for steamship space, and, if he is lucky, obtains authorization for space on approximately a certain date. If granted this authorization, he applies to the railroad company for a permit to ship the material from the steel works to tidewater. This permit expires in 10 days, but is easily renewable. Armed with these various documents he may now approach the steel mill for a place on its rolling schedules. Unless the merchant has railroad permit, steamship authorization and export license, the mills will not accept the business. When the mill has rolled the goods and shipped them to tidewater, however, the merchant's troubles are not over. Within recent weeks the United States shipping board has been assuming strict control of such shipping as is left in the foreign trade; consequently at this stage in the transaction it may step in and name the cargo that the ship—on which the merchant had booked space—may carry. Under such cicumstances the merchant can only pile his goods in warehouse at tidewater and wait for the next steamer or try to charter a small sailing vessel. The alternative of the sailing boat is not particularly alluring. If a sailing vessel has a capacity of around 1000 deadweight tons or more, the shipping board views it with jealous eyes and may press it into service. If it is around 500 tons or too small to interest the shipping board, its capacity is so insignificant in terms of iron and steel tonnage that it is hardly worth while. A sailing vessel will only make about two trips a year to a South American port and not much over one round trip to the far east. Several of the steel export merchants have thousands of tons of steel at tidewater, waiting boats. One large house doing general South American business, has over $2,000,000 worth of goods stored in American ports.



VARIOUS LINKS IN THE CHAIN OF AN EXPORT TRANSACTION

One Year's Credit Required

Now, while the steel is lying in warehouse, the letter of credit may expire, having originally been drawn, say, for only 60 days. In this connection, it is reported that the United States Steel Products Co. now will book tonnage only on the express terms of an irrevocable credit of one year. When the credit expires, the customer may cancel at will. This leaves the merchant with a tonnage of goods on his hands which may be made up especially, and, therefore, is practically impossible to resell. However, the customer may be prevailed upon to renew his credit and the merchant again breathes freely, but his troubles are not over. In a short time the export license will expire, having been originally granted for 90 days. If, in the meantime, the goods have been placed on the war trade board's conservation list, the merchant may have to whistle for his money. Or possibly, the export license is reissued, but the foreign customer is located in a country which requires an import license, such as France, Italy or England. In the course of time this import license will expire, causing more trouble. One French consumer, because of just

such a mischance, has over a quarter million dollars worth of goods lying in a New York warehouse, which he can't use because his import license expired just before the goods were shipped, and he cannot get is renewed.

The accompanying diagram shows the various links in the routine of an export transaction. Only an export seller himself can describe adequately the details and work involved in the welding of any one link. And, if any link breaks, through expiration of the time limit allowed, or other exigencies, the transaction falls through.

Situation Becoming Worse

The situation is not getting better. It is growing worse. Buenos Aires, for example, has been a kind of meal ticket for several of the merchants during recent months. Up until April, from four to six steamers were booked for this trip monthly. But in April, only one small steamer is booked and there is every possibility that the shipping board may order that this boat carry coal, tin plate or some other material needed for the production in Argentina of goods wanted by the allies. As stated previously, the board is constantly exercising stricter control. Sometimes it bargains with the owner or charterer of a vessel, agreeing to allow the latter to use the vessel for one more voyage, prior to taking it over for governmental purpose, but the board is to specify what the cargo shall be.

It is hardly likely the United States will launch enough new ships in 1918 to free vessels for commercial uses this year. And even if the shipping situation were less serious, the shortage of steel would remain an effective obstacle. The war trade board has a long list of iron and steel products on its conservation list, which could not be shipped even if there were plenty of boats.

The steel export merchants enjoyed a flourishing business in 1916 and 1917. They have developed extensive and specialized organizations. They have advertised widely in the foreign fields and have spent money lavishly. The present restriction of their business is the country's loss, just as their previous profits were the country's gain. But the seed they have sowed is not wasted. They have assisted the American manufacturers to better knowledge of the needs of the foreign trade and have implanted a desire for American goods among foreign consumers. The demand for steel abroad is growing steadily. One prominent seller estimates the tonnage requirements now piled up at 25,000,000 tons and says he could book 5,000,000 to 10,000,000 tons if he could promise deliveries. Sooner or later the bars will be let down and then the export merchants will be able to serve manufacturers on a broader scale than ever in the distribution of steel products overseas.

But, for the present, it seems as though the export merchants and the country at large must sacrifice a brilliant opportunity to develop foreign trade, because of the still bigger business of war.

Conservation List of Iron and Steel

ALLOYS, steel.
Bars, steel sheet.
Billets, steel.
Blades, saw (circular, hack and band).
Bloom, steel.
Boilers, marine.
Boilers, ship.
Cable (iron and steel) consisting of six wires or more.
Cable, stud link chain.
Cars (railway, completely assembled and unassembled and parts thereof).
Chain, stud-link, open-link.
Drilling machines, radial.
Drills, carbon and high-speed twist.
Drills, twist.
Ferroalloys.
Ingots, steel.
Iron, pig.
Iron pipe, cast.
Iron plates, including ship, boiler, tank and all other classes of iron plates ⅛ inch thick and heavier and wider than 6 inches and circles over 6 inches diameter, whether plain or fabricated.
Iron, scrap.
Locomotives and parts thereof.
Machines, as follows: Aeronautical, their parts and accessories; boring (horizontal and vertical); drilling (radial); milling, plain and universal (except hand millers); oil well drilling and accessories.
Machine tools: Grinders, internal, plain and universal; horizontal and vertical boring machines; lathes, all sizes; milling machines, plain and universal (except hand millers); planers; radial drilling machines; slotters; vertical boring mills, all sizes.
Manganese ore and metals thereof.
Mills, plate rolling.
Oil-well casing (frequently described as boring tubes).
Oil-well drilling implements, machinery and accessories.
Open-hearth blast furnaces.
Open-link chain.
Pipe, cast iron.
Plate, terne.
Plate, tin.
Plates, iron and steel, including ship, boiler tank and all other classes of iron and steel plates, ⅛ inch thick and heavier and wider than 6 inches and circles over 6 inches diameter, whether plain or fabricated.
Railway cars, completely assembled and unassembled and parts thereof.
Ship boilers.
Slabs, steel.
Steel, as follows: Alloy; billets; blooms; boiler tubes; files; abrasive; high speed; ingots; oil well casings (frequently described as boring tubes); plates, including ship, boiler, tank and all other classes of steel plates ⅛ inch thick and heavier and wider than 6 inches, and circles over 6 inches diameter whether plain or fabricated; scrap, sheet bars; slabs; wire rope; cable or strand consisting of six wires or more.
Steel furnaces.

Concrete Barge Ordered

The Ambursen Construction Co., 61 Broadway, New York, with a yard on the Hackensack river, has taken a contract from the bureau of construction and repair of the navy department for four reinforced concrete fuel oil and coal barges to be used in New York harbor. This is the first official recognition the navy department has given to the adaptability of reinforced concrete in ship construction. The requirements for these vessel are extremely severe and a variety of designs were considered before letting a contract. The chief consideration was the oil-proofing of concrete, which has been successfully provided for. The vessels are designed to carry a maximum of approximately 800 tons of fuel oil. They also are designed for carrying the same total tonnage of coal or other cargo. One of the factors leading to the selection of this type of vessel was speed of construction, as it is estimated the first vessel will be launched within 50 days, and the others at intervals of 10 days. It is expected that the navy department will build altogether 12 of these vessels. About 50 tons reinforced bars and wire cloth or expanded metal will be needed for each vessel.

More Boats Awarded

J. F. Duthie, vice president and general manager of J. F. Duthie & Co., shipbuilders, Seattle, has become president and practically sole owner of the plant by reason of the fact that he has taken over the interests of C. D. Bowles, former president. The Duthie yards have just closed a contract with the United States shipping board for construction of 10 additional 8800-ton steel vessels at a price of $17,000,000 which increases the number of boats awarded to this plant from 6 to 16. About $200,000 will be expended in making improvements and additions to the mechanical equipment of the plant.

Push Home Output of Ferroalloys

Government Giving Deep Study to Problem of Reducing Importations of Ores and Metals—Experts Discuss Subject at Pittsburgh Conference—Manganese, Chrome, Tin Tungsten, and Other Metals Receive Attention

PITTSBURGH, May 14.—Plans for increasing the domestic production of various ores essential to the manufacture of alloy steel and the attendant problems were discussed by scientists and mining experts in charge of the various experiment stations of the United States bureau of mines at a three-day conference here which ended last Saturday. After completing the discussions, the representatives of the bureau went to Washington where another three-day conference starting yesterday was begun. Final reports then are to be made to Director Van H. Manning of the bureau.

The necessity of increasing production and conserving supplies has been brought about by the action of the war department in taking over ships which were being used in bringing minerals to this country. The importance of the meeting was heightened by the fact that it followed immediately upon the gathering of steelmakers in Pittsburgh last Tuesday when plans for conserving the supplies of manganese and chrome ore were discussed and the question regarding a change in the practice of manufacturing alloy steel was debated.

May Cut Imports Deeply

It is estimated that the minerals involved in the study being made by the bureau of mines represent importations of about 2,000,000 tons. About three-fourths of this total, it is claimed, can be eliminated in the case of extreme necessity. It also has been pointed out that the importation of bulky materials congests the ports of the United States and exhausts its credit in the purchases of supplies abroad. Dorsey A. Lyon, supervisor of the bureau's stations, said that the importation of these minerals call not only for the diversion of ship tonnage from military service, but in addition requires that this country furnish fuel, equipment and supplies to the foreign mines producing these minerals, and also the transportation of other products which the latter demand in return for their minerals.

An interesting angle in connection with the development of domestic mines is the possibility, if not the probability, of a sweeping readjustment in the electric furnace industry being necessitated whereby the furnaces will be located near the mines so that the points of production of ferroalloys will be adjacent to raw material sources. The advantage claimed would be through the concentration of shipping by rail transportation. The ferroalloys would be carried to the steel mills in the east instead of the more bulky ores being transported to the furnaces in that section.

Reviews Western Developments

Dr. L. H. Dushak, metallurgist in charge of the station at Berkley, Cal., told THE IRON TRADE REVIEW of work that is being done to develop manganese and chrome ore mines on the Pacific coast and in the southwest.

"So far as known there are no extensive deposits of chrome ore in that section," said Doctor Dushak, "but there are a great many deposits that are not developed. With few exceptions the same thing applies to the manganese ore station. The problem is to build the industry from the ground up. In the case of chrome ore there are many possibilities of developing high grade deposits, but it is going to cost a great deal to get it out of the scattering pockets, some of which are almost inaccessible. There is also some low grade ore in California which may prove to be of moderate extent."

There are two plants on the Pacific coast which make ferroalloys. One of them is that of the Noble Electric Steel Co., Heroult, Cal., which has been reopened and is making ferromanganese and ferrosilicon. This company has five furnaces but is operating at from only 20 to 40 per cent of capacity, principally because of the difficulty of obtaining electrodes. The other is a new plant, that of the Pacific Electro Metals Co., at Bay Point, situated in the San Francisco Bay region.

At the present time steel industry requirements for manganese ore for the manufacture of ferromanganese and spiegeleisen are from 700,000 to 800,000 long tons per year of high grade ore, besides a large quantity of lower grade ores. In 1917 more than 500,000 tons were imported from Brazil, 50,000 tons from India and about 60,000 tons from the West Indies and Central America, besides 45,000 tons of ferromanganese from New England. The domestic production of high grade ore has 114,000 tons.

Domestic requirements of chrome ore for 1918 have been estimated at 150,000 tons of 50 per cent and of that 12,000 to 15,000 tons have been set aside for use as a refractory. In 1916 California produced about 50,000 tons, this ore being used in the manufacture of high-speed steel, automobile axles and springs, locomotive frames and certain parts of ore-crushing apparatus, in projectiles, armor plate and cannon linings. In 1917 the domestic production of chrome ore is estimated at about 42,000 long tons and the import at 72,000 long tons, making a total supply of 114,000 tons, which is a falling off of 50,000 tons as compared with 1916. The imports come from Rhodesia and New Caledonia.

Studying Tin Problems

Tin, which is an essential in the composition of bronze and for tin plate used in the manufacture of food containers and many utensils, is not found in the United States except for a small amount which comes from Alaska. The United States is importing about 70,000 short tons of tin annually, chiefly from the Straits settlements and Bolivia. An increased amount of tin ore is being imported from Bolivia for smelting in the United States. In addition to the supply of new tin a considerable quantity of this metal is recovered from scrap. Recovery of waste tin and substitutes for tin are being suggested as a conservation measure.

Domestic production of tungsten is chiefly from California and Colorado. It is one of the most important alloys for high speed tool steel and it is estimated that 99 per cent is so used. The supply of 60 per cent concentrates is between 8000 and 9000 tons, about one-half of which is imported and the other half is produced in the United States. Substitutes and better amount of vanadium used in the United States is only a few thousand tons, largely imported from Peru. The United States has a considerable production from Colorado and Utah. Uranium has possibilities for use in tool steel, but thus far it has been little used. The United States has large deposits in Colorado and Utah.

Tool Requirements Continue Slow

Few Large Inquiries Are in the Market, But the Average Demand is Good Compared With Conditions Previous to the Abnormal War Requirements—Forthcoming Ordnance Contracts Will Involve Large Machinery Purchases

GENERAL conditions in the machine tool market continue good, although few large lists are in sight at the present time. Manufacturers of materials not used for war purposes are diffident with regard to making purchases, and many companies which now are operating practically full time on war orders are displaying a reluctance as to adding new shop equipment pending the fulfillment of existing contracts. A great amount of shell and ordnance work is under consideration and the complete equipping of the large additional force of men to be called, will force the intensive use of all available machine shop facilities and the addition of much new machinery. No buying is anticipated on the forthcoming ordnance contracts in the immediate future, but the inquiries, tentative to date, indicate a large volume of buying to come. The demand for small lots holds steady, reinforced by occasional heavier requirements such as those coming from the Pacific and Gulf coasts for tools for shipyard shops. These inquiries have appeared as far east as Cleveland. In the east, also the buying for shipbuilding purposes shows a steady increase as new companies are formed to take up the task of producing tonnage. The latest undertaking in this line is a new yard to be built by R. C. Camp at Fernandina, Fla. New shell contracts are being made from time to time in and about Chicago and a steady buying is noted in small lots in that vicinity. The railway requirements continue light, though tentative lists have been issued in many cases, dependent upon final approval. The official announcement that the United States Steel Corp. will establish a government ordnance and munitions plant, the scope of which is unequalled in this country at the present time, ranks high as a development of an equipment market character. This plant has been considered by the government for some time and negotiations have been carried on with the object of building a unit which will surpass the Krupp works. The machinery requirements obviously will be large.

Steel Corporation Will Be Heavy Buyer

NEW inquiry in the eastern machinery market during the past week has been made up almost entirely of demand for single tools. While sellers of certain types of tools report a good volume of this demand, the situation generally is quiet. Considerable interest is manifested in the trade as to the scope of the railroad buying which appears likely to develop within the near future. As yet, the railroads have confined their buying to the purchase of a few miscellaneous tools, although two sizable lists are now pending, and indications point to others being issued shortly.

Confirmation this week of reports current for some time that the United States Steel Corp. is to establish a huge government munitions plant, has added optimism to the tone of the market and has given further evidence of the large demands to be made upon machine tool builders in the future. In the market at the present time is the Carolina Shipbuilding Co., which is buying a few tools for its proposed yard in the south. The Worthington Pump & Machinery Co., New York, which recently received a contract for pumps for Ford submarine chasers, is in the market for a few tools for its plants at Harrison, N. J., and Holyoke, Mass. The Savage Arms Co., Utica, N. Y., it is understood, is contemplating the erection of a large plant addition requiring new equipment.

Demand for boiler shop equipment is somewhat improved and a large order for tools of this description is expected to be closed this week. The Remington Arms-Union Metallic Cartridge Co., has just awarded a contract for the construction of several buildings at its plant in Bridgeport, Conn. A $1,000,000 shipyard will be erected at Fernandina, Fla., by R. C. Camp and associates. The company is said to have a $5,000,000 contract for the construction of ocean-going tugs and large barges for the French government. The Federal Shipbuilding Co. recently has purchased 21 acres along the Hackensack river, near Newark, N. J., with a view to further increasing its plant. A machine shop and several other buildings will be erected by Alexander McDonald at his shipyard in Port Richmond, L. I., N. Y.

Few New Crane Inquiries

Among the few new inquiries for cranes during the past week is that of the Sun Shipbuilding Co., Chester, Pa., which calls for one 25-ton overhead crane. The Reliance Fertilizer Co., Savannah, Ga., is in the market for two 2½-yard bucket cranes, one with a 40-foot and the other with an 80-foot span. Mitsu & Co., Ltd., New York, has purchased from the Cleveland Crane & Engineering Co. two 11½-ton overhead cranes, with 50-foot span, for export to Japan. The Chile Exploration Co. is expected to close this week on three 20-ton electric cranes for shipment to South America. The Submarine Boat Corp., Port Newark Terminal, N. J., has purchased 22 electric hoists

Small Lots Continue in Chicago

PREPONDERANCE of small orders for single tools is the continued feature of the machine tool market in Chicago. With continued placing of subcontracts for munitions, shops are finding necessity for adding to equipment, which is resulting in this sort of buying. Small lathes, up to 24 inches, are plenty and there is steady demand for them. Lathes over 24 inches are

THE gigantic scrap sheds and their busy, clanging cranes are typical of the immensity of the proposition of making enough Agathon Alloys to meet the ever-growing demand.

From the time the first charge went into the great furnaces, we have been engaged in a breathless race to keep apace of the call for Agathon Alloys.

Far-sighted steel users appreciate the wisdom of using the most carefully and conscientiously made alloy steel in the world.

The Central Steel Co.

Massillon, Ohio. ***Agathon City***

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Branch Offices:

Detroit Office: 326-27-28 Ford Bldg.,
F. Walter Guibert, District Representative

Cleveland Office: Hickox Building,
The Hamill-Hickox Co., District Representatives

Chicago Office: 1370 People's Gas Building,
122 So. Michigan Blvd. A. Schaeffer, District Manager

Philadelphia Office: 603 Widener Bldg.,
Frank Wallace, District Sales Manager

J. E. Dockendorff & Co.: 20 Broad Street, New York.
General Export Agent

comparatively scarce. A recent inquiry asked for forty 16-inch stud lathes to be used in machining hand grenades and the same buyer is also inquiring for fifteen 2-spindle high-speed drill presses. This inquiry is tentative and hinges on obtaining a contract for grenades. The Burlington railroad is still working on its list and has begun to place orders. The Winslow Bros. Co., which has a contract for 6-inch shells and also for a smaller shell, has practically covered its requirements except a few tools to fill in. The Rock Island arsenal is preparing to buy further equipment for which it has been given an appropriation, but its requirements have not yet been outlined definitely. The International Harvester Co. is inquiring tentatively for a large quantity of equipment for its Ohio plant said to involve about $1,500,000. As an instance of how second hand machinery is moving, a Chicago dealer recently sold a machine which had been on the warehouse floor for nine years and within 24 hours, before the machine had been shipped, had an opportunity to sell it to another buyer. The William Ganschow Co., Chicago, gear manufacturer, has bought a site for an addition. The Boggess Mfg. Co., Fond du Lac, Wis., will install a galvanizing plant. The Ampco Rolling Mill Corp., Menominee, Wis., is preparing to build a wire mill. The San Diego & Arizona railroad will build repair shops and other buildings at San Diego, Cal. The Patrick Lock Co., Indianapolis, will build a plant to manufacture machinery and locks. The Forge Products Corp., Ann Arbor, Mich., will build a machine shop and forge shop. The Walls Frogless Switch Co., Kansas City, Mo., will build a plant at Pueblo, Colo. The Western Iron Works, Spokane, Wash., has bought the machine shop of the Mark Machine Co., which it will equip for the manufacture of tractors and locomotives. The Houston Power & Supply Co., Houston, Texas, will install machine shop equipment, including drill presses, lathes, and milling machines. The J. I. Case Tractor Co., Racine, Wis., will build a machine shop. The Universal Machinery Co., West Allis, Wis., will build a plant. The Pfau Motor Pumping Co., Milwaukee, will build a plant. The Green Foundry & Furnace Works, Des Moines, Iowa, will build a foundry and remodel a building recently purchased, for its shops. The United States Switch Co., Eau Claire, Wis., is doubling its foundry capacity and a new machine shop will be added. The company is now in the market for milling machines, turret lathes, a bolt cutter, some forging equipment and several lathes. It is also planned to install an electric furnace.

Varied Inquiries in Cleveland Market

BUSINESS which in ordinary times would be considered good characterizes the machine tool market in the Cleveland district. But measured in the light of what has prevailed during the early spring, the demand is not heavy. Small lots still continue to mark the major portion of the inquiries and the classes of tools required vary widely. Some dealers report an increase of business in the lighter machines, while others state that there is nothing moving but heavy equipment. Several inquiries, which in the aggregate make a large volume, are reported from the Pacific coast, from shipbuilding companies in the vicinity of Seattle and a few from the region of San Francisco. Heavy planers, shapers, and horizontal boring mills for shipyard use are required. Several representatives from western coast companies have come on personally to secure needed tools. A few inquiries from southern shipbuilding companies, also have been noted. The Alabama Drydock & Shipbuilding Co., Mobile, Ala., is in the market for large lathes, planers, and vertical boring mills for shipyard use. The Bowen Products Corp., Cleveland, is in the market for a turret lathe. The National Steel Barrel Co., Cleveland, will purchase a heavy straight side press. The Shuler Axle Co., Detroit, is inquiring for a steam hammer. The Timken Detroit Axle Co., Detroit, requires a 10-ton traveling crane. The Dravo Contracting Co., Pittsburgh, is in the market for a 36-inch throat punch and shear. The Pittsburgh Iron & Steel Co., Midland, Pa., is inquiring for a 8 to 10-foot vertical boring mill. The Atlas Car & Mfg. Co., Cleveland, wishes a 4-inch bar horizontal boring mill. The American Forge & Machine Co., Canton, is inquiring for a 36-inch swing lathe. P. Pettler & Son, Beaver Falls, Pa., are in the market for a screw cutting engine lathe; a 26 to 36-inch planer with a bed between 8 and 10 feet; and a 20 to 30-inch swing roll lathe.

New Ventures and Changes of Producers and Sellers

THE L. Wolff Mfg. Co., manufacturer of plumbing supplies, Chicago, is about to abandon its offices and plant at Lake and Jefferson streets. The offices will be removed to the company's building at 111 North Dearborn street. The plant will be concentrated at Fulton street and Hoyne avenue where it is already established.

The Oesterlein Machine Co. has removed its machinery into its new plant on Colerain avenue, Cincinnati, which it expects to have in operation soon.

The Seaboard Steel & Manganese Corp. has moved its headquarters from 71 Broadway, to 50 East Forty-second street, New York.

The Machinery and Metal Sales Co., New York, W. J. Eldridge, manager, has opened an office at 1216 Merchants Exchange building, San Francisco.

The office of the Steel Founders' Society of America has been moved from 1643 Oliver building to 511 Magee building, Pittsburgh.

The Tufts Machine Co. of the Jamaica Plain district, Boston, is removing to Westboro, Mass.

Henry Stock and Frank Perkins, formerly connected with the Ladewig & Stock Co., have purchased interests in and assumed the management of the C. W. Hathaway Machine Co., Waukesha, Wis., manufacturer of special machinery.

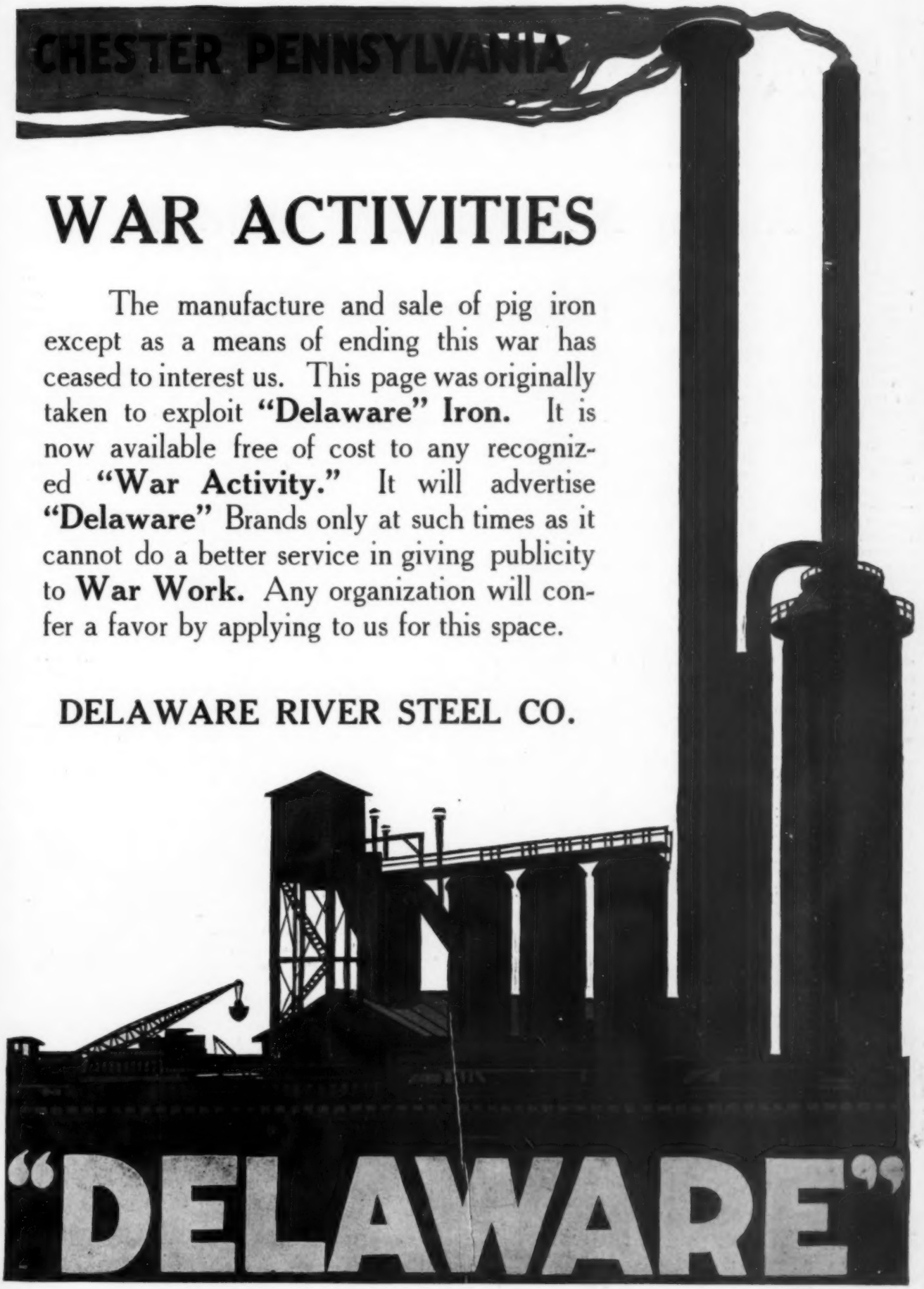
The Aborn Steel Co., Inc., New York, has opened an office at 520 Marine Bank building, Buffalo. D. J. Mahoney is in charge as district manager for the Aborn Steel Co., Inc., and the Century Steel Works.

The McVoy Sheet & Tin Plate Co. moved its offices on May 1 from 429-30 to 625-26 Oliver building, Pittsburgh.

The name of Watson Bros., New Castle, Pa., has been changed to Watson Bros. Steel Co.

Midgley & Prentice, Inc., dealers in metals and steel, will remove their executive offices to Rooms 312 and 314 Hudson Terminal building, 30 Church street, New York.

The name of the Asbestos Protected Co., Pittsburgh, has been changed to the Aspromet Co. This company handles a line of specialties used in building construction. The company has moved its New York office to 170 Broadway.



WAR ACTIVITIES

The manufacture and sale of pig iron except as a means of ending this war has ceased to interest us. This page was originally taken to exploit **"Delaware" Iron.** It is now available free of cost to any recognized **"War Activity."** It will advertise **"Delaware"** Brands only at such times as it cannot do a better service in giving publicity to **War Work.** Any organization will confer a favor by applying to us for this space.

DELAWARE RIVER STEEL CO.

Say you saw it in THE IRON TRADE REVIEW

New Construction and Equipment

Concise and Timely Business Building Opportunities from the Field of Industry

Among New England Factories

BANGOR, ME.—The Bangor-Brewer Shipbuilding Co. has been incorporated with $100,000 capital by Charles D. Stanford, William S. Higgins, Irving G. Stetson, Ralph S. Crowell, George H. Hamlin, Calvin P. Thomas, James Q. Gulnac and Josiah T. Taylor.

MACHIAS, ME.—The Machias Shipbuilding Co. has been incorporated with $200,000 capital by A. I. Babb, H. S. Palmer and C. F. Clark.

PORTLAND, ME.—The American Ammunition Co. has been incorporated for the making of ammunition and general manufacturing with $100,000 capital by William S. Linnell, S. E. Hunt and B. L. Merryman.

PORTLAND, ME. — The New England Construction & Engineering Corp. has been incorporated to build ships with $10,000 capital by J. Ernest Roberts, Calvin S. Lane and Charles W. Wentworth, Westbrook, Me.

BURLINGTON, VT.—Fire damaged the plant of the Vermont Milk Chocolate Co., causing a heavy loss.

BOSTON, MASS.—The navy department plans to enlarge the Charlestown navy yard into a ship-repairing base at a cost of $7,000,000. The plans call for a foundry, machine shops, ship fitter shop, boiler shop, power plant, general storehouse and administration building.

BOSTON.—The Coastwise Ship Engineering Corp. has been incorporated to build ships with $250,000 capital by Richard H. Rich, New Haven, Conn., James L. MacEachran, West Somerville, Mass., and William W. Rich, Hingham, Mass.

BOSTON, MASS.—The Ideal Gas Machine Co. has been incorporated with $20,000 capital by A. H. Nichols, James F. McHugh, Medford, Mass., and R. A. Jordan.

CHELSEA, MASS.—The wooden box factory and wharf of the Parsons Mfg. Co. was damaged by fire with a loss of approximately $60,000. The value of the machinery and building was placed at $50,000.

HINGHAM, MASS.—The government contemplates building 10 hollow tile and concrete, 1-story, 50 x 150-foot storage buildings to cost $200,000, and five 2-story, 50 x 200-foot magazine buildings, to cost $200,000, at the naval magazine.

NATICK, MASS.—The Northway Motors Corp., Boston, will build a brick and reinforced concrete, 1-story, 600 x 200-foot automobile factory.

SOUTH MIDDLETON, MASS.—Fire in the mills of the Copper Product Corp. caused a loss estimated at $50,000.

SPRINGFIELD, MASS. — The New England Steel Castings Co., newly organized, has acquired the old Norcross stone cutting plant, and will start at once making changes necessary for its work. H. L. Stevens, Boston, New England manager of the Lackawanna Steel Co., is treasurer.

WARE, MASS.—Steps to prevent the dismantling of the Ware & Brookfield street railway, recently sold for scrap, have been taken by the selectmen of the towns which the line served.

WESTBORO, MASS.—The Tufts Machine Co., Jamaica Plain, Mass., has procured property on Brigham street, to which it will move its business.

WESTFIELD, MASS.—The M. & G. Aircraft Co. has been incorporated to do airplane and dirigible manufacturing with $50,000 capital by W. H. Ensign, Frank E. Cowles and A. E. Pfeiffer.

WORCESTER, MASS.—The A. H. Steele Co., iron forgings, plans to build a plant on Frank street, where it has acquired a 10-acre site.

PROVIDENCE, R. I.—George E. Boyden & Son, hosiery manufacturers, have had plans prepared for an addition to the plant. The building will be two stories, 41 x 100 feet.

DANBURY, CONN. — The Warner Bros. Co., Bridgeport, Conn., will build a 1-story, 50 x 175-foot addition to its branch plant.

DANBURY, CONN.—The business of the National Electric Utilities Corp. has been bought by Landers, Frary & Clark, New Britain, Conn. It is understood the new owners intend to continue the business in the present plant and to considerably enlarge it.

NEW BRITAIN, CONN.—The New Britain Machine Co. has purchased 133 acres on South street and will build a 100 x 340-foot pressed steel factory, to cost $125,000.

NEW HAVEN, CONN.—The Holmes Special Tool Co. has been incorporated with $25,000 capital by William E. Sloan, Percy J. Holmes and Harold H. Holmes.

NEW HAVEN, CONN. — The Lederer-Murray Co. has been incorporated to deal in machinery with $25,000 capital by David A. Lederer, James E. Murray and Harold S. Lederer.

PUTNAM, CONN. — The Cochrane Mfg. Co., Malden, Mass., will build a dam, power house and a transmission line at the Quinnebaug dam.

TORRINGTON, CONN.—J. Howard Gath, Brooklyn, N. Y., has purchased 171 acres at West Goshen. A 3-story sanitarium, to cost $100,000 will be built.

WATERBURY, CONN. — The O'Neil & Warner Co. has been incorporated to make wagons and automobiles with $10,000 capital by William O'Neil, Frank Clark, Edward J. Carroll, William F. Morgan, James E. O'Neil and William H. O'Neil.

WATERBURY, CONN. — The United States Pin Co. has been incorporated to make pins with $100,000 capital by Edwin S. Ingraham, Edward B. Reilly and Harry Beardsley.

WATERBURY, CONN.—A 1-story, 60 x 90-foot addition will be erected at the plant of the Waterbury Clock Co.

WATERFORD, CONN.—The Connecticut Shipbuilding Co., Inc., New London, Conn., contemplates erecting a barge building plant at Brownings beach.

Along the Middle Atlantic Seaboard

BROOKLYN, N. Y.—A $40,000,000 terminal will be erected south of Bush terminal in this city by the government. Six large piers will be constructed in addition to a number of warehouses, plans for which have not been completed.

BROOKLYN, N. Y. — Plans have been filed by the Morse Dry Dock Co., Fifty-eighth street and First avenue, for a $70,000 forge shop. The plans call for a 100 x 175-foot building.

BROOKLYN, N. Y. — A $15,000 factory will be erected by George H. Amann.

BUFFALO. — The Washburn-Crosby Co will build a warehouse on Ganson street, this city, to cost $18,000.

BUFFALO.—A $60,000 oxygen producing plant will be erected here by the Linde Air Products Co., 30 East Forty-second street, New York. The proposed structure will be one story high, 100 x 100 feet.

DUNKIRK, N. Y. — The United States Radiator Co. will build an addition to its warehouse here.

LONG ISLAND CITY, N. Y.—The Ir-

OHIO STEEL CASTINGS

OUT in the wheat fields of the Great Northwest, where they harvest the Nation's grain, time is just as important as in the busiest factory.

Plowing, planting, reaping, threshing must be done on Nature's schedule. Mistakes or loss of time can never be made up. It is imperative that every machine and implement used be absolutely reliable.

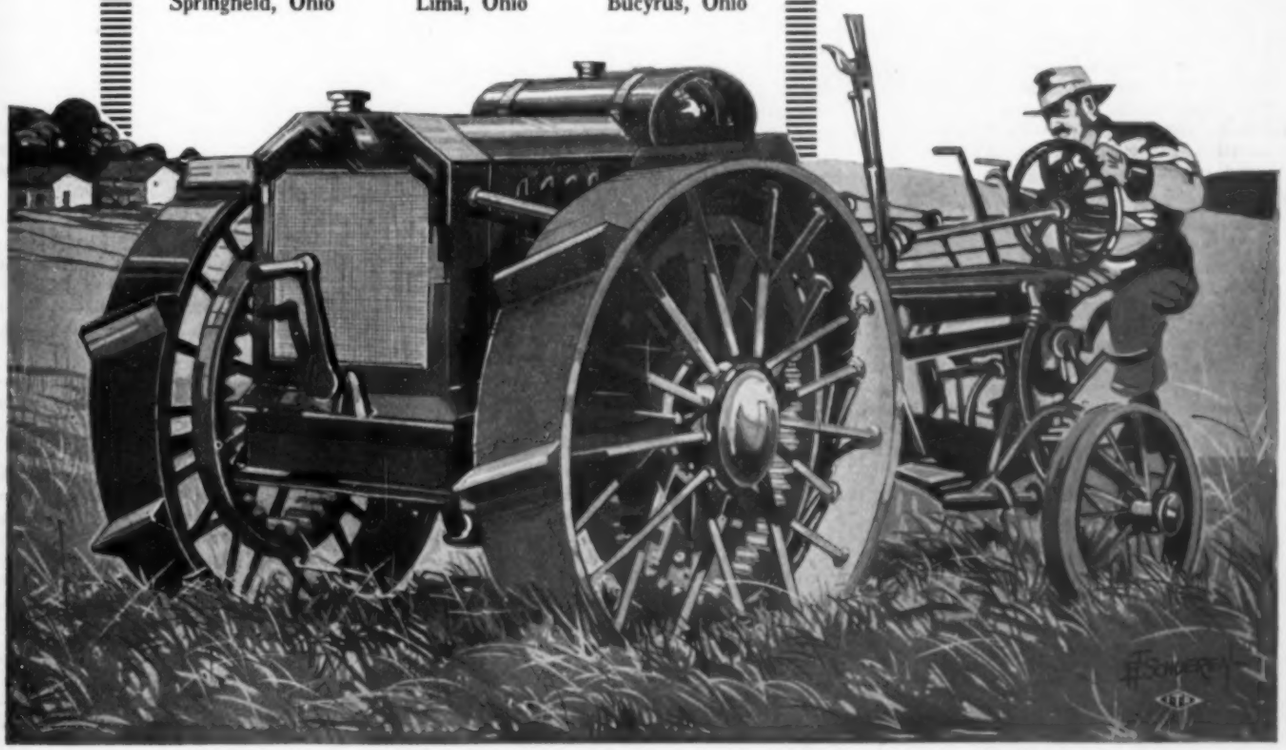
The fact that Ohio Steel Castings are sought for use in tractors and other types of farm machinery, is proof of their quality.

Quality PLUS Service

The Ohio Steel Foundry Co.

Plants:

Springfield, Ohio Lima, Ohio Bucyrus, Ohio



Say you saw it in THE IRON TRADE REVIEW

ving Iron Works will start work shortly on a $3000 addition.

NEW YORK.—The Crane Co., Chicago, manufacturer of steel valves and piping, has purchased property on Park avenue from 134th to 135th streets for the construction of a plant. The property has a frontage of 200 feet and is 90 feet deep.

UTICA, N. Y.—The Bossert Corp. will build a factory, 116 x 62 feet, at a cost of $20,000, in which to manufacture stamped articles for automobiles.

ASHMORE, PA.—The Lehigh Valley railroad will build a mixer plant here this spring.

FORT WASHINGTON, PA.—The Columbia Chemical Co., this city, will build an addition to its plant at once.

HAZLETON, PA.—The Lehigh Valley Coal Co. is arranging to electrify its Oneida No. 4 slope in this city.

HAZELTON, PA.—The J. S. Wentz Co. will increase the capacity of its coal mines at the upper Lehigh by building a breaker.

HUNTINGTON, PA.—The Aetna Explosives Co. will spend $150,000 on the erection of a mechanical nitrating plant at the company's works at Mount Union, and $75,000 for housing workmen at the plant.

LANSDALE, PA.—The Lansdale Foundry Co. is taking bids on the construction of an addition to its foundry. The addition will be 70 x 120 feet.

PHILADELPHIA. — A $70,000 machine shop addition will be erected by Dougherty & Bachran. The proposed structure will be two stories high, 35 x 112 feet.

PHILLIPSBURG, PA. — Charles Dunlap, this city, and A. R. Klotten, Albany, N. Y., and others, have organized the Meadow Brook Coal Co., which will equip a plant near Clarion, Pa.

PITTSBURGH. — The Standard Underground Cable Co. has bought 20,000 square feet of land on Pike street, and it is understood they contemplate the erection of an addition to their plant.

PITTSBURGH.—Fire damaged the three buildings of the Tarentum Glass Co. at Brackenridge, causing a damage of $350,000.

SHARON, PA.—The Pittsburgh & Lake Erie railroad will increase the capacity of its Ferrona yards near Wheatland, Pa., and considerable equipment will be bought.

CAMDEN, N. J.—Bids soon will be received on a $100,000 plant by the Joseph Campbell Soup Co. The proposed structure will be five stories high, 54 x 127 feet.

IRVINGTON, N. J. — The Liberty Tool Co., Newark, N. J., plans to erect a 2-story, 100 x 100-foot factory in this city.

IRVINGTON, N. J. — The Die Casting Co. will make alterations to its plant, costing approximately $10,000.

NEWARK, N. J.—An $18,000 warehouse addition will be erected by the Rossendale-Reddaway Belting & Hose Co.

NEWARK, N. J.—The Liberty Machine & Tool Co., 692 South Eleventh street, plans to enlarge its factory and install from $75,000 to $100,000 worth of additional machinery.

Activities in the Central States

BARTON, WIS.—W. F. Gadow, owner of the Barton Roller Mills, is planning to build a new concrete dam and hydro-electric power plant costing about $20,000. The dam will be 140 feet long and 11 feet high.

CAMERON, WIS.—A new building will be erected here by the Bank of Cameron.

CLINTONVILLE, WIS.—Sealed bids are being received until May 20 by J. A. Perkins, secretary of the board of education, for the erection of a 2-story brick and concrete high school building, 76 x 139 feet, and a power house, 58 x 63 feet. The estimated cost is $100,000. Architects Parkinson & Dockendorff, LaCrosse, Wis., drew the plans.

EAU CLAIRE, WIS. — Architect E. J. Hancock is taking bids until May 15 for the erection of a $50,000 public garage and repair shop for the Union Auto Co., C. H. Dickson, secretary. It will be 2-story and basement, 105 x 125 feet, of brick and reinforced concrete.

FAIRWATER, WIS. — Architect B. E. Mehner, Fond du Lac, Wis., has been engaged to prepare plans for a new $35,000 high school, 45 x 100 feet, two stories and basement.

FOND DU LAC, WIS.—J. S. McCullough, city engineer, and J. C. Pinney Jr., consulting engineer, Milwaukee, are preparing plans for two steel spans across the Fond du Lac river at West Second and Brooke streets. One bridge will be 270 feet long and the other 64 feet long, with concrete piers and abutments. The structures will cost about $40,000 complete.

FOND DU LAC, WIS.—The Fred Rueping Leather Co. is contemplating the construction of a new generating plant at its factories here. Tentative plans are now being prepared by Edward F. Kottke. The work will cost about $100,000.

GREEN BAY, WIS.—The Miller Scrap Iron Co., 1121 Main street, is having plans prepared by Architect C. H. Williams, Green Bay, for a 2-story warehouse and scrap handling plant, 50 x 80 feet.

KENOSHA, WIS.—Simmons Co. is preparing to build a new administration building at an estimated cost of $100,000. Plans for the building are being prepared by Architect Max Dunning, 304 South Wabash avenue, Chicago.

MADISON, WIS. — The Buller Coupler Co., capitalized at $15,000, has been chartered to manufacture tractor coupling devices by Edward E. Parkinson, James L. Clarke and Bascom B. Clarke.

MARATHON CITY, WIS. — Fred W. Krause, Wausau, Wis., has been awarded the general contract for erecting a $200,000 monastery for the St. Joseph Province of the Capuchin Order at this point. The building will be 150 x 170 feet.

MARINETTE, WIS.—A 2-story brick factory addition, 35 x 120 feet, will be erected by the Aerial Cutlery Co., 114 Hosmer street. Plans are being completed by Architect Derrick Hubert, Menominee, Mich.

MIDDLETON, WIS.—James R. and Edward J. Law, architects, Madison, Wis., are preparing plans for a new high school building at Middleton, to be 60 x 100 feet, two stories and basement, of brick and tile, costing $30,000.

MILWAUKEE.—The Pawling & Harnischfeger Co., manufacturer of hoists and cranes, has remodeled the plant of the former Prime Steel Co., Mitchell and Kinnickinnic avenue, and will add a 1-story machine shop addition at its main plant.

MILWAUKEE.—The Universal Machinery Co., 784 Thirtieth street, manufacturer of tools and lathes, is planning to build a new plant in West Allis, including a machine shop 150 x 300 feet, foundry 90 x 150 feet, boiler and transformer house 40 x 60 feet and other buildings.

MILWAUKEE. — Articles of incorporation have been filed by the J. C. Theilacker Co. Capital stock is $5000 and incorporators are Julius C. Theilacker, George H. Crombie Jr., and Ben J. Sommers. The company will engage in the manufacture of architectural iron work.

MILWAUKEE.—The Milwaukee Paper Box Co., 400 Florida street, has purchased a site at South Pierce street and Muskego avenue, and will erect a new factory costing about $200,000 with equipment. The main building will be 120 x 145 feet and five stories high. Bids will be taken soon by Schnetzky & Son, architects, Milwaukee.

MILWAUKEE. — The Stein Construction Co., Medford, Wis., and Milwaukee, is the lowest bidder and probably will be awarded the contract for constructing a reinforced concrete and steel highway bridge over the Milwaukee river at Greentree road for $30,370.

MILWAUKEE.—A new shoe factory costing $40,000 will be erected at North avenue and Twenty-fifth street by the Wobst Shoe Co., now located at 499 Twelfth street. The building will be 50 x 165 feet, two stories and basement, of brick and concrete.

MILWAUKEE.—Architect Henry C. Hengels, First National Bank building, is completing plans and will take bids at once for the erection of a 2-story brick and mill factory building, 100 x 200 feet, at 418-436 West Ontario street, Chicago, for the Hinckley & Schmidt Co.

MILWAUKEE.—An additional steam generating unit of 150 kilowatts capacity is to be installed by the C. Ansted Leather Co., 560 Commerce street.

MILWAUKEE. — The Wisconsin Gear & Axle Co., Plankinton arcade, has purchased a factory site at State street and Hawley road, just west of the city limits, and will begin work at once on the erection of a machine shop, 50 x 150 feet. The general contract for the work has been let to Henry Kroening, 893 Layton boulevard, Milwaukee.

MILWAUKEE. — Architects Schnetzky & Son will award contracts within a few days for the construction of a new 5-story fireproof manufacturing plant at South Pierce

100

ROLLING MILLS

Of Our Design and Manufacture

79 in the United States of America

5 in Canada	1 in France
5 in England	1 in Belgium
4 in Germany	1 in Austria
3 in India	1 in Australia

AS CONSULTING ENGINEERS

we prepare estimates and make drawings for contemplated rolling mills. Our services include electrical engineering.

AS MANUFACTURING ENGINEERS

we enter into contracts for complete rolling mills, producer-gas machines, and wire drawing equipment.

MORGAN CONTINUOUS ROLLING MILLS—
STANDARD OF THE WORLD

MORGAN CONSTRUCTION CO.

Worcester, Mass., U.S.A.

Say you saw it in THE IRON TRADE REVIEW

street and Muskego avenue for the Milwaukee Paper Box Co., 400 Florida street. The new plant will be 120 x 145 feet and represent an investment of approximately $250,000.

MILWAUKEE.—Klug & Smith, consulting engineers, have completed plans for a new bascule bridge costing about $50,000 for the city of Sheboygan, Wis.

OCONOMOWOC, WIS.—Sealed bids are being taken by the board of public works until May 13 for furnishing and laying 1150 feet of 4-inch class C water pipe, two hydrants, one valve, and appurtenances.

OSHKOSH, WIS.—The bridge and road committee of the Winnebago county board awarded contracts for two bridges costing $4750 to Morris Martin, Berlin, Wis., and the contract for a $2000 bridge to the Whitewater (Wis.) Bridge Co.

RICE LAKE, WIS.—Local capital is negotiating with the Wisconsin Aluminum Foundry Co., Manitowoc, Wis., to build a branch foundry in Rice Lake.

PORT EDWARDS, WIS.—Architect A. F. Billmeyer, Grand Rapids, Wis., has been engaged to prepare plans for a city auditorium, jail and community building, 72 x 95 feet, 2-story and basement, for Port Edwards. It will cost about $30,000.

SHEBOYGAN, WIS. — A new factory building and warehouse, 60 x 100 feet, three stories high, will be erected at 1819 Calumet road by A. Locke & Co., conducting a scrap metal yard, small foundry and machine shop. Architects Juul & Smith are in charge.

SOUTH WAYNE, WIS.—A public garage and repair shop costing about $12,500 will be erected here by R. H. Blackbourn, according to plans made by Architect A. F. Rote, Monroe, Wis.

SPRING GREEN, WIS.—The Wisconsin Cheese Producers' federation has engaged Architect B. E. Mehner, Fond du Lac, Wis., to prepare plans for a $35,000 cold storage warehouse and refrigerating plant, of brick and tile, 2-story and basement, 40 x 100 feet.

STOUGHTON, WIS.—A new blacksmith shop to be devoted entirely to the production of parts for manure spreaders will be erected by the Stoughton Wagon Co. The building will be 45 x 66 feet, two stories high, of brick and concrete.

STURGEON BAY, WIS.—Architect F. D. Crandall, Sturgeon Bay, has completed plans for a new high school at Gibraltar, near Fish creek, and bids for the erection of the building are being taken by John B. Poirier, clerk at Fish creek.

TIGERTON, WIS.—Hackbarth & Krause, Wausau, Wis., have taken the general contract for erecting a new high school building at Tigerton. Architects Swartout & Speer, Wausau, Wis., are supervising engineers.

WATERTOWN, WIS. — The Monarch Tractor Co., Watertown, Wis., has awarded the general contract for the erection of a new machine shop and assembling floor to the Austin Co., Cleveland. The building will be of brick, steel and steel sash, 140 x 160 feet, 1-story high. Enlargement of the foundry is also planned by the Monarch company under its recently announced plant extension program.

DETROIT.—The Detroit Shipbuilding Co., M. E. Farr, president, will build a machine shop.

DETROIT.—The Kelsey Wheel Co., John Kelsey, president, will build a 1-story addition, 80 x 140 feet to cost $20,000.

DETROIT.—The Universal Gear Works, Highland Park, capitalized at $30,000, has been formed to operate a general machine shop with gear cutting a specialty, by L. G. Younglove, Frank J. Brown and Frank L. Banta.

IRON MOUNTAIN, MICH.—The county highway engineer's office will take sealed bids until May 15 for constructing a new reinforced concrete and steel bridge between this city and Homestead, Wis. The structure will consist of three 80-foot spans and the cost will be borne jointly by Wisconsin and Michigan.

MUSKEGON, MICH.—Muskegon Heights is to have a new manufacturing concern known as the Sectional Tire & Rubber Co. The promotor is G. W. Kitterman. The plant will probably be located on Ninth street south of McKinley avenue.

MUSKEGON, MICH. — The Continental Motors Corp. has purchased 34 acres adjoining its plant and will use the property in connection with general plans for improvement and enlargement.

BRADFORD, ILL.—The Jim Dandy Collar Co. will build a plant of three buildings. John Hanifen, 6 Neitney building, Ottawa, Ill., is architect.

CHICAGO. — The Riverside Iron Works, 10624 Buffalo street, will build a foundry addition 60 x 75 feet. R. G. Pierce, 10 South La Salle street, is architect.

CHICAGO.—W. E. Gehring, First National Bank building, Chicago, will build a wagon works, 60 x 115 feet at 1819 South State street, to cost $15,000.

CHICAGO.—Wilson & Co., Union Stock Yards, will build a 2-story refrigerator car repair shop, 426 x 651 feet, at Forty-third street and Hermitage avenue.

CHICAGO. — The Independent Button & Machine Co., 3940 Ravenswood avenue, will build a 3-story foundry, 42 x 162 feet.

CICERO, ILL.—The Kropp Forge Co., Charles A. Kropp, president, 2512 West Twenty-first street, Chicago, will build a 1-story plant, 150 x 350 feet.

DANVILLE, ILL.—Officers of the Sidell & Olney railroad, now operating as a part of the Cincinnati, Indianapolis & Western railroad, have asked permission to dismantle the road and cease operation. The road is 76 miles long.

DECATUR, ILL.—The Decatur Malleable Iron Co. will build a foundry. Schmidt, Garden & Martin, 104 South Michigan avenue, Chicago, are architects.

EVANSTON, ILL.—The National Biscuit Co. is building a 1-story machine shop addition 50 x 115 feet.

GIRARD, ILL.—The city has voted a bond issue of $50,000 for a new school building.

ROCKFORD, ILL. — The Rockford Knitting Co. will add two floors to their factory.

SPRINGFIELD, ILL. — The Springfield Terminal Railway has filed a petition with the Illinois public utilities commission, asking permission to construct an extension of its line at a cost of $50,000.

CHARLESTOWN, IND. — This township has sold an issue of $36,000 4½ per cent bonds for a new high and grade school building.

FRANKLIN, IND.—Trustees of Franklin college will erect a science hall, 125 x 95 feet, three stories with basement.

HUNTINGTON, IND. — O. E. Eviston, auditor of Huntington county, will open bids May 8 for the construction and repair of five bridges in various parts of this county, plans for which are on file at his office.

KOKOMO, IND. — The Liberty Pressed Metal Co., 516 Sycamore street, will build a plant.

LA GRANGE, IND.—Bids will be received until May 6 by Harry B. Lewis, county auditor, for a steel bridge over Pigeon river.

RICHMOND, IND. — The Kile Electric Meter Co., Indianapolis, may locate in Richmond.

CANTON, O.—The Union Metal Co. contemplates the construction of a factory addition to its plant, 1420 Maple avenue. C. C. Barrick is president. The engineer is H. L. Rastetter, care of owner. Construction is to be of brick and steel.

CANTON, O.—A consulting engineer will soon be chosen in connection with the intended pumping station to be erected by Canton, Frank de Corps, director of public service. W. E. Sarver is city engineer. Brick, steel and reinforced concrete construction is planned. The estimated cost is $150,000.

CINCINNATI. — Additions are being planned for the plant of the Cincinnati Steel Castings Co., 1220 Queen City, by Martin Fisher, architect, who will receive estimates next week.

CLEVELAND.—The city council has consented to the exchange of land necessary to the construction of the Cleveland Builders' Supply Co. shipyards at the foot of East Fortieth street. The enterprise will now go forward at a cost of $200,000.

COLUMBUS, O.—The state of Ohio, care of D. S. Creamer and H. S. Riddle, will take bids until May 20 for the construction of an administration building to cost $100,000.

DAYTON, O.—A. V. Dickerson, president of the Dickerson Steel Specialties Co., announces that at the close of the war, a large steel mill will be started in Dayton, involving the expenditure of $300,000.

DAYTON, O.—Walter H. Aszling, clerk of the board of commissioners, will open bids May 11 for the construction of bridge No. 89 in German township, complete plans for which are on file with the engineer.

FREMONT, O.—The Modern Construction Co. has acquired possession of the Frank Smith farm in Ballville township of 80 acres and it is understood the company intends to put a large stone crushing plant on the property.

LIMA, O. — The Allen county commissioners have delivered a $10,000 four-months note to the city auditor to pay the county's share of the construction of the Main street bridge. The cost of this structure will be $41,000. It will span the Ottawa river.

SANDUSKY, O.—The Bay View Foundry Co. plans the installation of a steelmaking unit. It also contemplates the erection of a foundry.

TOLEDO, O.—Toledo university trustees will at once let a contract for the erection of a machine shop and a 2-story dormitory for 100 soldier machinists.

YOUNGSTOWN, O. — Architect Louis Miller will soon take bids for additions and alterations to a factory building at 113 Market street for the Miller-Smythe Co., same address.

YOUNGSTOWN, O.—The Trumbull Steel Co. is to add $8,000,000 to its capitalization subject to a favorable vote by its stockholders May 17, but it is understood that the excess is not to be immediately issued. It is believed that the company will build a blast furnace in the near future. Jonathan Warner is president.

ZANESVILLE, O. — The Ohio National Guard armory, care Col. J. E. Gimpering,

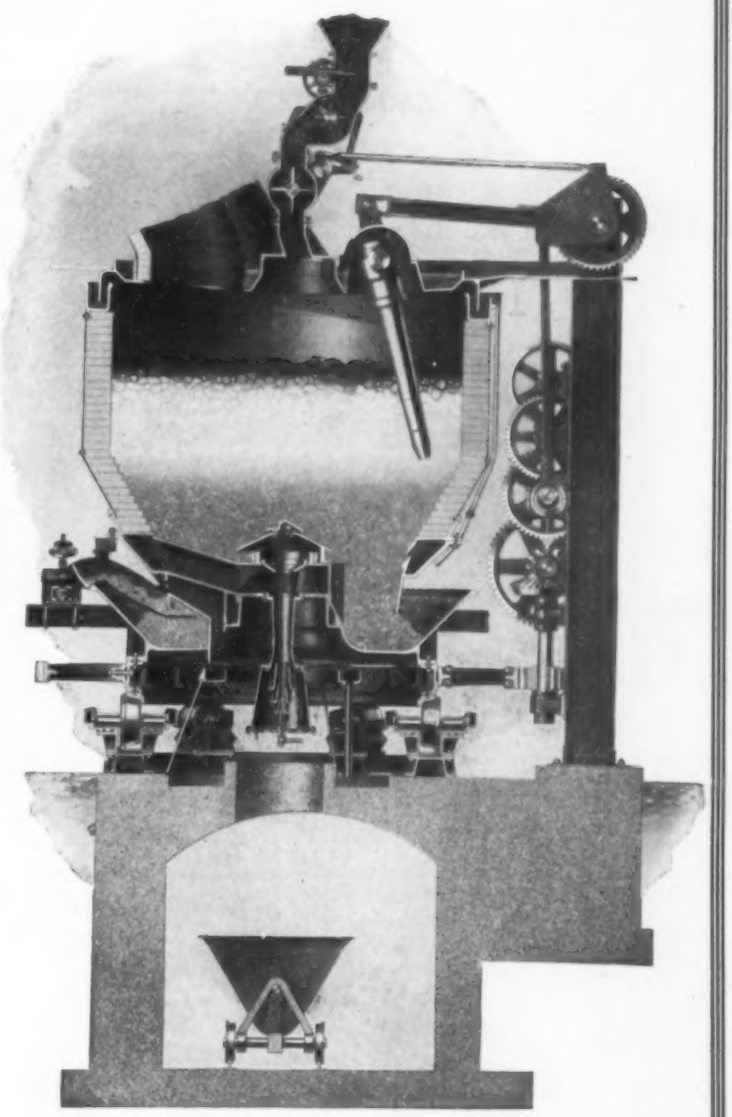
The Hughes Mechanical Gas Producer

REPEAT ORDERS
Indicate Satisfaction

A partial list of repeat customers showing number of Hughes Producers used by each.

Carnegie Steel Co.	119
American Steel & Wire Co.	56
Bethlehem Steel Co.	54
New Jersey Zinc Co.	42
National Tube Co.	41
Jones & Laughlin Steel Co.	40
Lackawanna Steel Co.	39
Indiana Steel Co.	38
Inland Steel Co.	36
Minnesota Steel Co.	36
Pittsburgh Steel Co.	36
American Sheet & Tin Plate Co.	32
Republic Iron and Steel Co.	32
American Rolling Mill Co.	30
Corrigan, McKinney & Co.	30

More than 1000 in use



Write for Bulletin A-4

Bulletin A-4 contains considerable information on the subject of producer gas and explains the Hughes Uniform Feed, Water Cooled Poker, Blowing, Mixing and other special features which contribute to its splendid performance. A copy is waiting your request.

THE WELLMAN-SEAVER-MORGAN CO.

CLEVELAND, OHIO, U. S. A.

Iron and Steel Prices

Corrected to Tuesday Noon

IRON ORE

Superior Ores, Per Ton, Lower Lake Ports	
Old range Bessemer, 55 iron	$5.95
Mesabi Bessemer, 55 iron	5.70
Old range non-Bess., 51½ iron	5.20
Mesabi non-Bess., 51½ iron	5.05

WAREHOUSE PRICES

Steel bars, Chicago	4.10c
Steel bars, Cleveland	4.035c
Steel bars, Detroit	4.085c
Steel bars, Philadelphia	4.10c
Steel bars, New York	4.095c
Steel bars, St. Louis	4.17c
Steel bars, Cincinnati	4.085c
Steel bars, St. Paul	4.22c
Steel bars, Buffalo	4.05c
Iron bars, Buffalo	4.65c
Iron bars, Chicago	4.10c
Iron bars, Cleveland	3.985c
Iron bars, Detroit	4.75c
Iron bars, St. Louis	4.17c
Iron bars, Cincinnati	4.085c
Iron bars, Philadelphia	4.50c
Iron bars, New York	4.659c
Shapes, Chicago	4.20c
Shapes, Detroit	4.185c
Shapes, St. Louis	4.27c
Shapes, St. Paul	4.32c
Shapes, New York	4.195c
Shapes, Cleveland	4.135c
Shapes, Philadelphia	4.20c
Shapes, Buffalo	4.15c
Shapes, Cincinnati	4.185c
Plates, Buffalo	4.40c
Plates, Chicago	4.45c
Plates, Detroit	4.435c
Plates, St. Louis	4.52c
Plates, St. Paul	4.57c
Plates, New York	4.445c
Plates, Cleveland	4.385c
Plates, Philadelphia	4.45c
Plates, Cincinnati	4.435c
No. 10 blue anl. sheets, Chi.	5.45c
No. 10 blue anl. sheets, C'eve.	5.385c
No. 10 blue anl., Buffalo	5.40c
No. 10 blue anl., sheets, St. L.	5.52c
No. 10 blue anl. sheets, Cinci.	5.435c
No. 10 blue anl. sheets, St. Paul	5.57c
No. 10 blue anl. sh., Detroit	5.435c
No. 28 black sheets, Chgo.	6.45c
No. 28 black sheets, Cleve.	6.385c
No. 28 black sheets, Cinci.	5.45c
No. 28 black, Detroit	6.435c
No. 28 black sheets, St. L.	6.52c
No. 28 black sheets, St. Paul	6.57c
No. 28 galv. sheets, Chgo.	7.70c
No. 28 galv. sheets, Cleve.	7.635c
No. 28 galv. sheets, Cinci.	6.635c
No. 28 galvanized, Detroit	7.685c
No. 28 galv. sheets, St. L.	7.77c
Hoops, Cleveland	4.885c
Hoops, Detroit	4.935c

IRON AND STEEL SCRAP

(Prices in Gross Tons)

STEEL WORKS USE

Bundled sheets, Cincinnati	$22.50 to 23.00
Bundled sheets, Pittsburgh	22.00
Bundled sheets, Cleveland	23.50 to 24.25
Bundled sheets, Buffalo	24.00 to 25.00
Boiler plate, cut, No. 1, Chg.	24.50 to 25.50
Boiler plate, cut No. 1, St. L.	25.50 to 26.00
Frogs, switches, guards, St. L.	28.50 to 29.00
Frogs, switches, guards, Chgo.	29.00
Heavy melting steel, Pitts.	29.00
Heavy melting steel, Buffalo	30.00
Heavy melting steel, Chgo.	29.00
Heavy melt'g steel, Cleveland	29.00
Heavy melting steel, Cinci.	27.50 to 28.00
Heavy melt'g steel, east. Pa.	28.00 to 29.00
Heavy melting steel, N. Y.	26.75
Heavy melting steel, St. L.	26.50 to 27.00
Heavy melting steel, Birming.	23.00 to 25.00
Hydraulic press. sheets, Cleve.	28.50 to 29.00
Hydraulic press. sheets, Pitts.	26.00
Hydraulic press. sheets, Chgo.	26.00 to 26.50
Knuckles, couplers, Chgo.	34.00
Knuckles, coup., St. Louis	32.50 to 33.00
Low phos. steel, Buffalo	37.50
Low phos. steel, Pittsburgh	39.00
Low phos. steel, eastern Pa.	39.00
Shoveling steel, Chicago	28.50 to 29.00
Shoveling steel, St. Louis	26.50 to 27.00
Springs, Chgo.	34.00
Steel rails, short, Chicago	34.00
Steel rails, short, Cleveland	34.00
Steel rails, short, St. Louis	30.75 to 31.25
Steel rails, old, Birmingham	24.00 to 25.00
Stove plate, Chgo.	25.50 to 26.50
Stove plate, Cincinnati	20.00 to 20.50
Stove plate, St. Louis	22.50 to 23.00
Stove plate, N. J. points	23.75
Stove plate, Birmingham	20.00 to 22.00
Stove plate, Buffalo	24.50 to 25.00
Stove plate, eastern Pa.	23.00 to 24.00
Stove plate, Cleveland	25.00 to 25.50
Stove plate, Pittsburgh	22.00
Bundled sheets, Cincinnati	20.00 to 20.50

Freight Rates, Pig Iron

Mahoning and Shenango valleys to:	
Cleveland	$1.10
Newark, N. J.	3.50
Boston	3.70
Philadelphia	3.30
Pittsburgh	1.10
St. Louis	3.70
Minneapolis, St. Paul	4.54
Buffalo to:	
Albany, N. Y.	$1.26
New England (rail)	3.10
New York and Brooklyn (rail)	3.10
Virginia furnaces to:	
Philadelphia	$3.27
New England	3.77
Brooklyn, Jersey City, Newark	3.52
Birmingham, Ala., to:	
Boston	6.00
Cincinnati	2.90
Chicago	4.00
Cleveland	4.00
Louisville, Ky.	2.65
Minneapolis, St. Paul	5.85
New York (r. and w.)	6.00
Philadelphia (r. and w.)	5.25
Pittsburgh	4.90
Savannah, Ga.	2.75
St. Louis	3.40
Chicago to:	
Des Moines	$2.80
Minneapolis, St. Paul	2.00
Milwaukee	.50
Moline, Ill.	1.15
Omaha	3.58
St. Louis	1.58
Ironton and Jackson, O., to:	
Chicago	$3.00
Cincinnati	1.40
Cleveland	1.90
Detroit	2.10
Indianapolis	1.80
Minneapolis, St. Paul	4.54
Duluth, Minn., to:	
Minneapolis, St. Paul	$1.25
Mayville, Wis.:	
Minneapolis-St. Paul	$1.75

Freight Rates, Finished Material

Pittsburgh, carloads, per 100 lbs., to:	
New York	19.5 cents
Philadelphia	18.5 cents
Boston	21.5 cents
Buffalo	17.0 cents
Baltimore	18.0 cents
Cleveland	13.5 cents
Cincinnati	18.5 cents
Chicago	21.5 cents
Detroit	18.5 cents
Minneapolis and St. Paul	32.9 cents
Denver	82.5 cents
St. Louis	27.0 cents
New Orleans	30.7 cents
Birmingham	45.0 cents
Pacific coast (all rail)	$1.00
Pacific coast (tin plate)	1.00

IRON MILL USE

Angle bars, iron, Chgo.	38.50 to 39.00
Angle bars, steel, St. Louis	35.00 to 35.50
Arch bars, transoms, Chgo.	43.00 to 44.00
Arch bars and transoms, St. Louis	45.00 to 45.50
Busheling, No. 1, Cleveland	29.00 to 30.00
Busheling, No. 1, Buffalo	29.00 to 30.00
Busheling, No. 2, Buffalo	21.00 to 23.00
Busheling, No. 1, Pittsburgh	32.00
Busheling, No. 1, Cincinnati	25.00 to 25.50
Busheling, No. 1, Chgo.	28.75 to 29.25
Busheling, No. 2, Chgo.	19.25 to 20.25
Busheling, No. 1, St. Louis	27.00 to 27.50
Cast borings, New York	16.00 to 16.50
Cast borings, eastern Pa.	19.00
Cast borings, Buffalo	18.00 to 19.00
Cast borings, Cleveland	18.00
Cast borings, Cincinnati	15.50 to 16.00
Cast borings, Pittsburgh	19.00
Cast borings, Birmingham	12.00 to 12.50
Cast borings, Chgo.	17.75 to 18.25
Cast borings, St. Louis	16.50 to 17.00
City wrought, long, N. Y.	31.00
Cut forge, Chicago	30.50 to 31.50
Forge flashings, small, Cleve.	27.00 to 27.50
Forge flashings, large, Cleve.	27.00 to 27.50
Forge No. 1, eastern Pa.	26.50 to 27.50
Grate bars, Buffalo	24.50 to 25.00
Grate bars, Cleveland	25.50 to 26.00
Grate bars, N. J. points	23.75
Iron axles, Pittsburgh	46.50
Iron axles, Cincinnati	43.00 to 43.50
Iron axles, Cleveland	46.50
Iron axles, Chicago	46.50
Iron axles, eastern Pa.	46.50
Iron axles, St. Louis	46.00 to 46.50
Iron axles, Buffalo	45.00 to 47.00
Iron rails, Chicago	38.00 to 39.00
Iron rails, Buffalo	36.00 to 37.00
Iron rails, Cincinnati	33.00 to 35.00
Iron rails, St. Louis	35.50 to 36.00
Iron rails, Cleveland	34.00
Machine turnings, Cincinnati	16.00 to 16.50
Machine turnings, Cleve.	17.00 to 17.50
Machine turnings, Buffalo	17.00 to 17.50
Machine turnings, N. Y.	16.00 to 16.50
Machine turnings, Pitts.	18.00 to 19.00
Machine turnings, east. Pa.	18.50 to 19.00
Machine turnings, Birming.	17.00 to 17.50
Machine turnings, Chicago	17.75 to 18.25
Machine shop turnings, St. L.	17.50 to 18.00
Pipes and flues, Cleveland	24.50 to 25.50
Pipes and flues, Chicago	26.75 to 26.75
Pipes and flues, St. Louis	25.50 to 26.00
R. R. mch. cast, No. 1, Buff.	34.00
R. R. wrgt. No. 1, Buffalo	34.00
R. R. wrgt., No. 1, east Pa.	34.00
Railroad wrgt. No. 1 Cinci.	33.50 to 34.00
Railroad wrgt., No. 1, Cleve.	34.00
R. R. wrought, No. 1, Pitts.	34.00
Railroad wr'ght, No. 2, Chgo.	30.50 to 31.50
Railroad wr'ght, No. 1, Chgo.	33.50 to 34.00
R. R. wrgt. No. 1, Birming.	25.00 to 27.00
No. 1 yard wrought East Pa.	33.00
No. 1 busheling wrgt., E. Pa.	31.00
Sheet wrought, Pittsburgh	34.00
Railroad wrgt., No. 1, St. L.	33.00 to 35.50
Railroad wrgt., No. 2	32.00 to 32.50
Wrought pipe, Buffalo	27.00 to 28.00
Wrought pipe, eastern Pa.	31.50 to 32.00
Wrought pipe, ungraded, eastern Pa.	29.00

IRON OR STEEL WORKS USE

Axle turnings, Cleveland	$24.00
Axle turnings, Buffalo	24.00
Heavy axle turn'gs, E. Pa.	24.00
Heavy axle turnings, Pitts.	25.00
Shafting, New York	35.50
Shafting, eastern Pa.	39.00
Steel car axles, Pittsburgh	46.50
Steel car axles, Birmingham	30.00 to 32.00
Steel car axles, New York	43.00
Steel car axles, Buffalo	44.00 to 46.00
Steel car axles, Cleveland	44.00
Steel car axles, eastern Pa.	46.50
Steel car axles, Chgo.	46.50
Shafting, St. Louis	37.50 to 38.00
Steel car axles, St. Louis	46.00 to 46.50

IRON FOUNDRY USE

Car wheels, (iron), Pitts.	$29.00
Car wheels, (steel), Pitts.	34.00 to 35.00
Car wheels, eastern Pa.	29.00
Car wheels, Buffalo	29.00
Car wheels, Chicago	29.00
Car wheels, St. Louis	28.50 to 29.00
Car wheels, Birmingham	25.00 to 27.00
Car wheels, Cleveland	30.00
Tram car wheels, Birming.	21.50 to 24.00
Cast, No. 1, cupola east. Pa.	33.00
Cast, No. 1, Birmingham	23.00 to 25.00
Cast, No. 1, Cleveland	31.50
Cast, No. 1, Cincinnati	31.00 to 31.50
Cast, 1, heavy, N. J. points	32.25 to 32.75
Cast, 1, machy., N. J. points	32.50 to 32.75
Cast, No. 1, Chicago	30.50 to 31.00
Cast, No. 1, Pittsburgh	32.50 to 33.00
Cast, No. 1, St. Louis	25.00 to 25.50
Malleable, Cincinnati	30.00 to 34.00
Malleable, Cleveland	30.00 to 34.00
Malleable, Buffalo	29.00 to 34.00
Malleable, Pittsburgh	33.00 to 34.00
Malleable, east. Pa.	29.00
Malleable, cupola, East Pa.	32.00
Malleable railroad, Chgo.	33.00 to 34.00
Malleable, agricultural, Chgo.	32.00 to 32.50
Malleable railroad, St. Louis	28.00 to 28.50
Malleable agricultural, St. L.	27.25 to 27.75

MISCELLANEOUS USES

Boiler punchings, Chgo.	36.00 to 36.50
Reroll. rails, 5 ft. & ov., Pitts.	34.00
Reroll. rails, 5 ft. & ov., Chgo.	34.00
Reroll. rails, 5 ft. & ov., E. Pa.	34.00
Reroll. rails, 5 ft. & ov., St. L.	33.50 to 34.00
Reroll. rails, 5 ft. or over, Cleve.	34.00
Rerolling rails, long, Birm.	37.50 to 38.50
Locomotive tires, Chgo.	42.00 to 43.00
Locomotive tires, St. Louis	40.50 to 41.00